

**CONCEPTUAL STUDY
OF
ARTICULATED STABLE OCEAN PLATFORM**

**FINAL REPORT
PART II
(VOLUME IV)**

CONTRACT NO. N00167-95-C-0113
CDRL SEQUENCE NO. G005

PREPARED FOR

CARDEROCK DIVISION
NAVAL SURFACE WARFARE CENTER

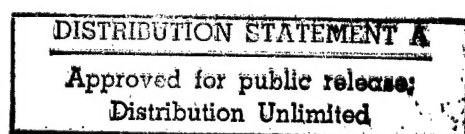
DTIC QUALITY INSPECTED 4

Prepared by

McDermott Engineering Houston. L.L.C.
801 N. Eldridge Street
Houston, Texas 77079

MEH Project 44271

May 6, 1997



19970605 145

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS None	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION / AVAILABILITY OF REPORT	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE		Approved for public release; distribution is unlimited.	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) MEH Project 44271		5. MONITORING ORGANIZATION REPORT NUMBER(S) CD/NSWC MSSPO (102) CR-96/03	
6a. NAME OF PERFORMING ORGANIZATION McDermott Engineering Houston LLC	6b. OFFICE SYMBOL (if applicable)	7a. NAME OF MONITORING ORGANIZATION Naval Surface Warfare Center, Carderock Division	
6c. ADDRESS (City, State, and ZIP Code) 801 North Eldridge Street Houston, TX 77079		7b. ADDRESS (City, State, and ZIP Code) 9500 MacArthur Boulevard West Bethesda, MD 20817-5700	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION Defense Advanced Research Projects Agency	8b. OFFICE SYMBOL (if applicable) TTO	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER Contract N00167-95-C-0113	
8c. ADDRESS (City, State, and ZIP Code) 3701 North Fairfax Drive Arlington, VA 22203-1714		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO. 9750400	PROJECT NO.
		TASK NO. 	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) (U) Conceptual Study of Articulated Stable Ocean Platform			
12. PERSONAL AUTHOR(S) Trevor R.J. Mills and Zhihuang (Alex) Ran			
13a. TYPE OF REPORT Final	13b. TIME COVERED FROM 10/29/95 TO 11/27/96	14. DATE OF REPORT (Year, Month, Day) 1996 September 25	15. PAGE COUNT
16. SUPPLEMENTARY NOTATION Final Report - Part 2 in 4 Volumes: OMB-95-214-1 through OMB-95-214-4, Model Studies of Articulated Stable Ocean Platform			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
		articulated stable ocean platform, ASOP, floating production, offshore oil storage	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) A conceptual study has been completed to evaluate the feasibility of a new concept of a floating storage platform - the Articulated Stable Ocean Platform (ASOP). The unique aspects of the ASOP is the articulation of the stabilize buoys which were introduced for the purposes of reducing wave load and overall vessel motion. The ASOP was designed to have a fuel storage capability of 1 million barrels and to support a topside up to 12,000 kips in total weight. The fuel storage tanks were designed in such a way that the draft of the platform would remain unchanged at any loading condition without adjusting the ballast. This greatly simplified the operations and allowed the platform to continue other activities while loading and off-loading.			
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Keith R. McAllister		22b. TELEPHONE (Include Area Code) (301) 227-5430	22c. OFFICE SYMBOL NSWCCD 293

REPORT DOCUMENTATION PAGE 2

The study shows that the ASOP has adequate stability and satisfies the stability requirement of the certifying authorities. Both numerical analysis and model test showed that the ASOP offers exceptional motion response characteristics in all its degrees of freedom. In terms of platform motion response, the ASOP is capable of operating in more severe weather conditions than a conventional surface vessel type platform. A seven body (six buoys and the hull) coupled motion analysis in ocean environment was performed and results in general agreed with the model test. However, both numerical analysis and model tests showed that the articulated buoys have no clear advantage over fixed buoys in the global motion of the ASOP. The reduction of forces by using articulation did not significantly improve the motion of the platform. Furthermore, the analysis and model test showed that compared to the fixed buoy case, using articulations increased the slow drift motions of the ASOP in random waves. The study also indicated that the introduction of articulations complicated the hydrostatic stability of the platform. Damaged stability was the governing factor in determination of the size of the articulated buoys. In conclusion, this conceptual study indicated that the fuel storage ASOP is a viable concept. Its large storage capability and exceptional motion characteristics allow many applications both in civil and military purpose.

Preliminary Report No. OMB-95-214-1

**MODEL STUDIES
OF
ARTICULATED STABLE
OCEAN PLATFORM**

VOLUME IV

JUNE 1996

PREPARED FOR

**McDERMOTT ENGINEERING HOUSTON
801 N. ELDRIDGE STREET
HOUSTON, TEXAS 77218**

PREPARED BY

**OFFSHORE MODEL BASIN
578 ENTERPRISE STREET
ESCONDIDO, CALIFORNIA 92029**

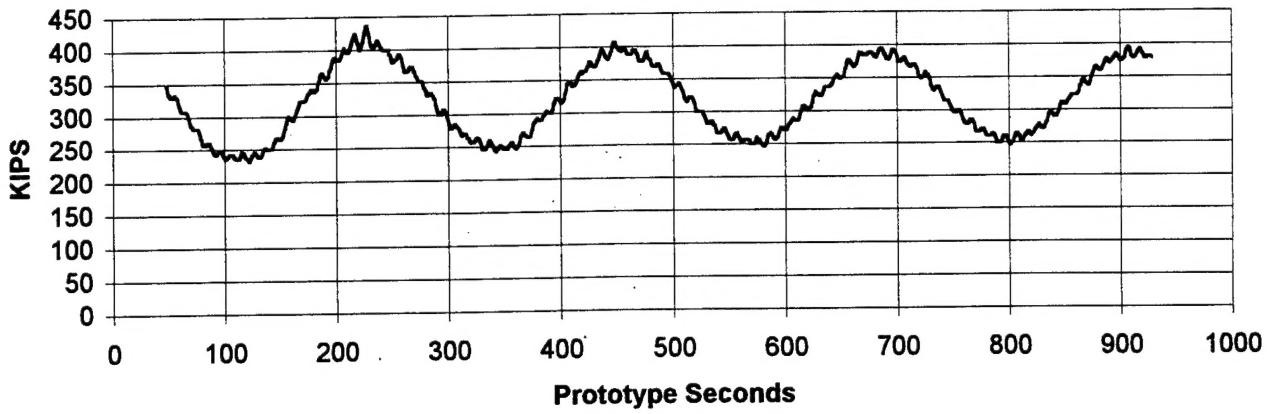
APPENDIX I

FILTERED TIME HISTORY PLOTS

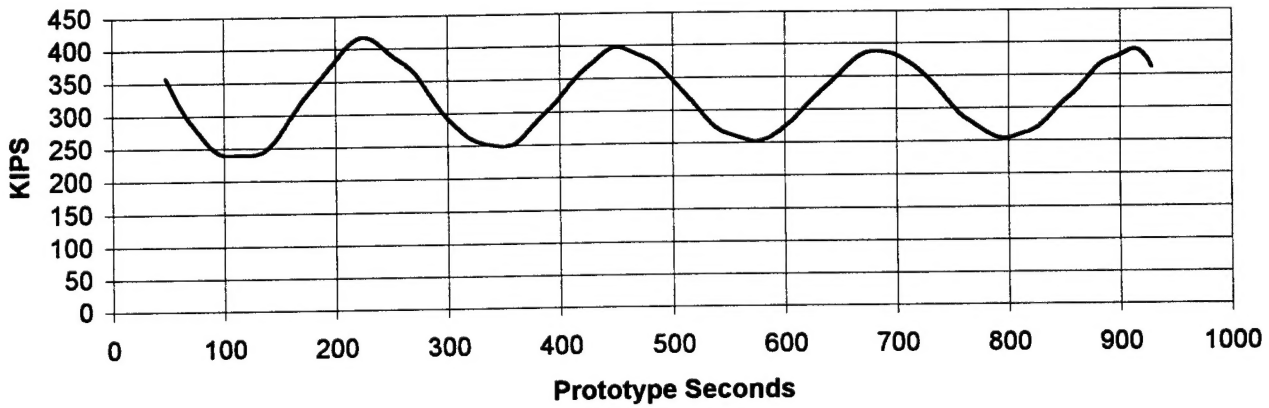
PART 2 OF 2

TEST A703 - ML_1 TENSION

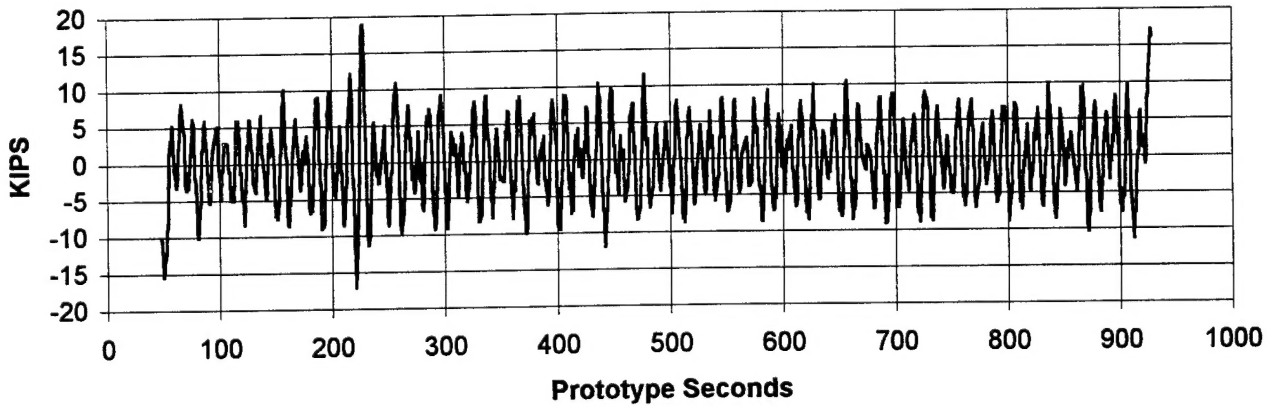
Unfiltered Time History



Filtered Low Frequency Time History

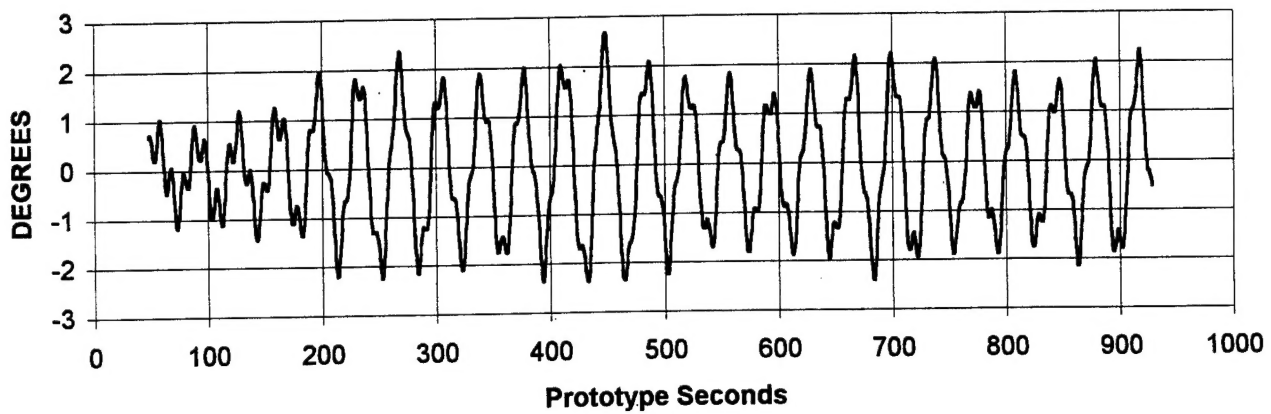


Filtered High Frequency Time History

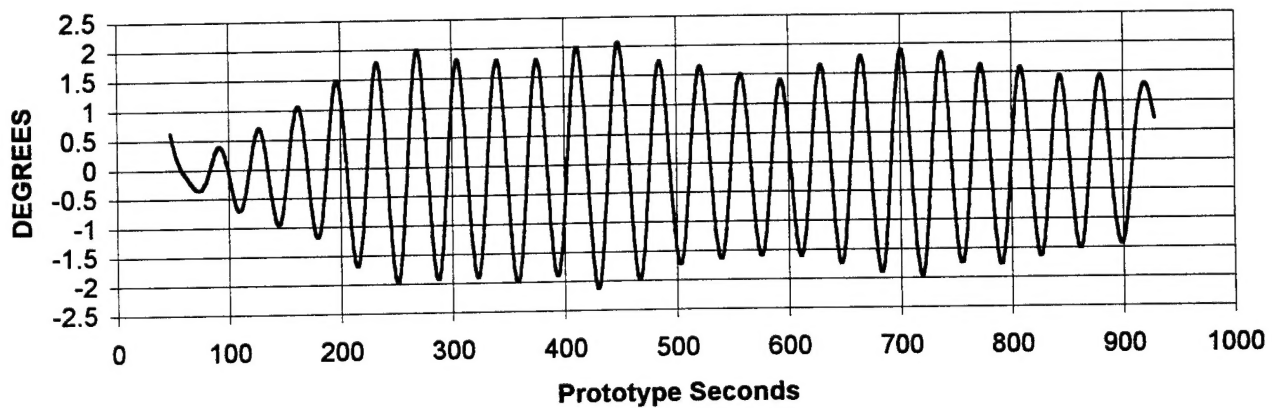


TEST A703 - PITCH

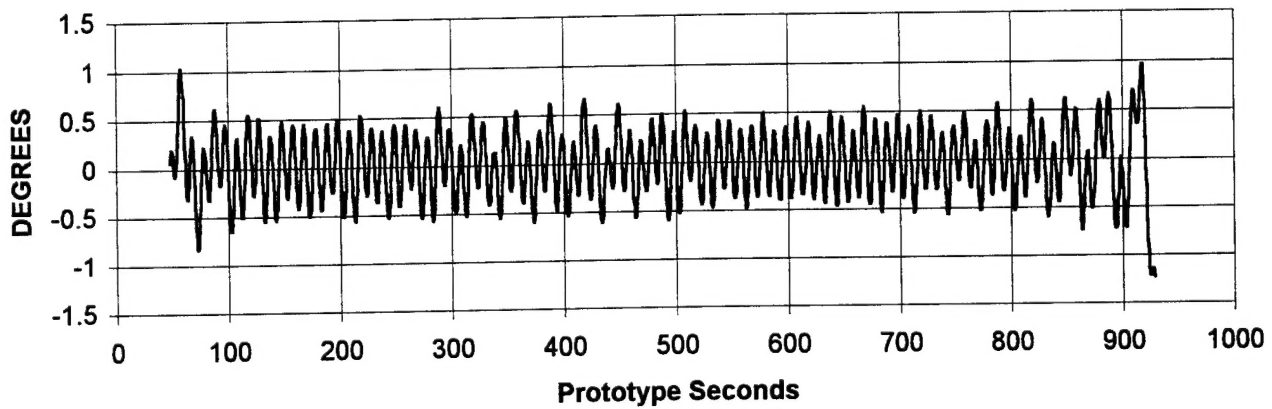
Unfiltered Time History



Filtered Low Frequency Time History

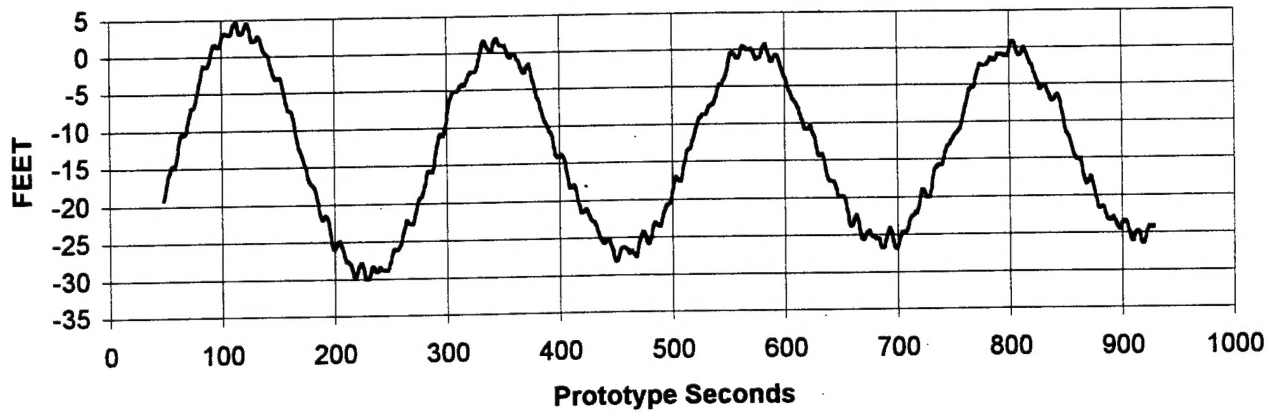


Filtered High Frequency Time History

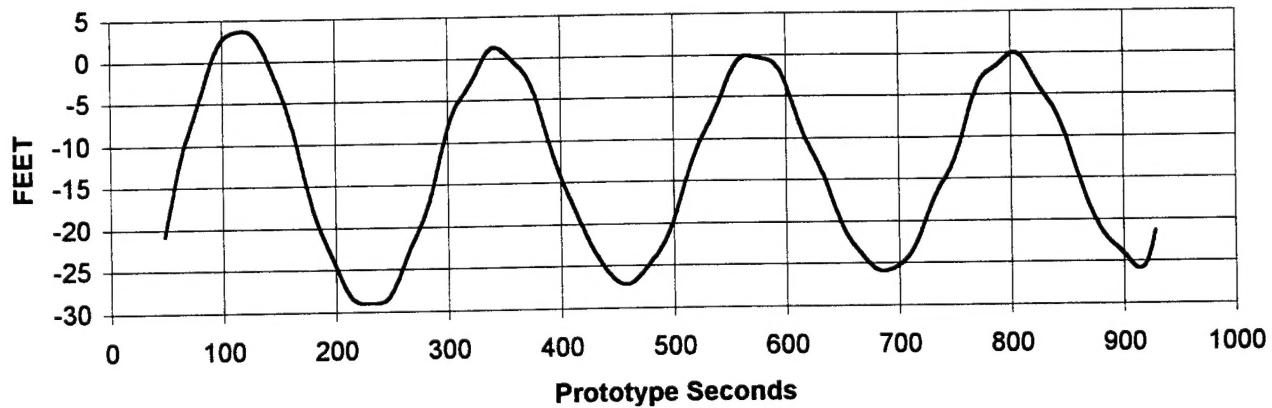


TEST A703 - PT SURGE

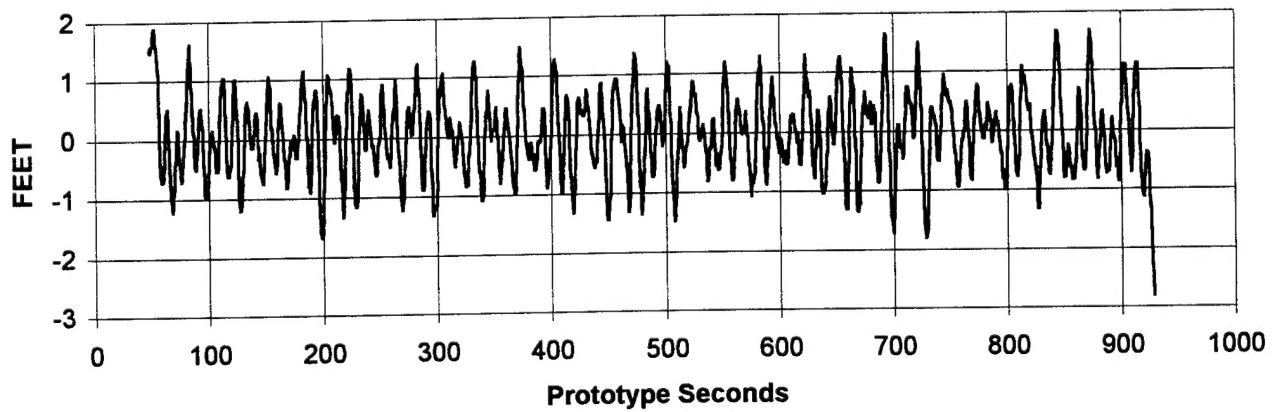
Unfiltered Time History



Filtered Low Frequency Time History

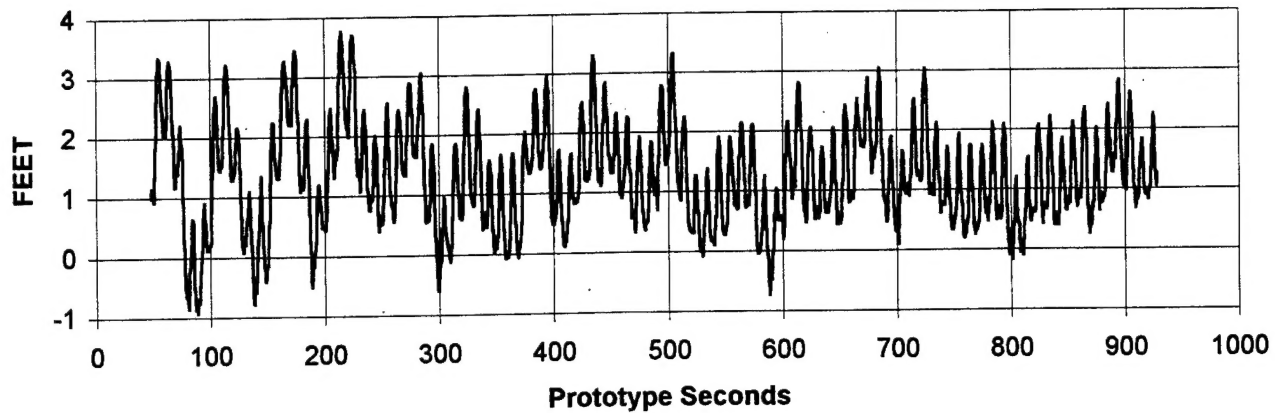


Filtered High Frequency Time History

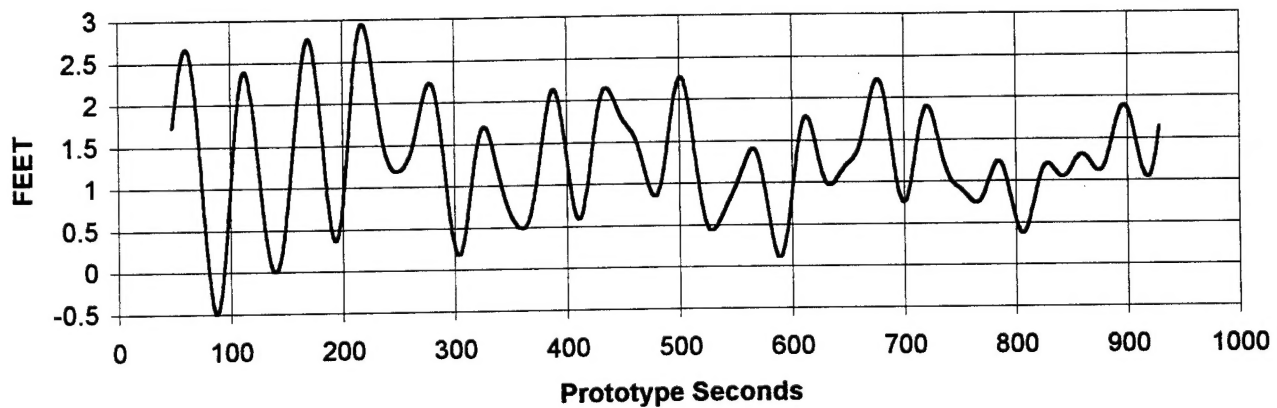


TEST A703 - PT HEAVE

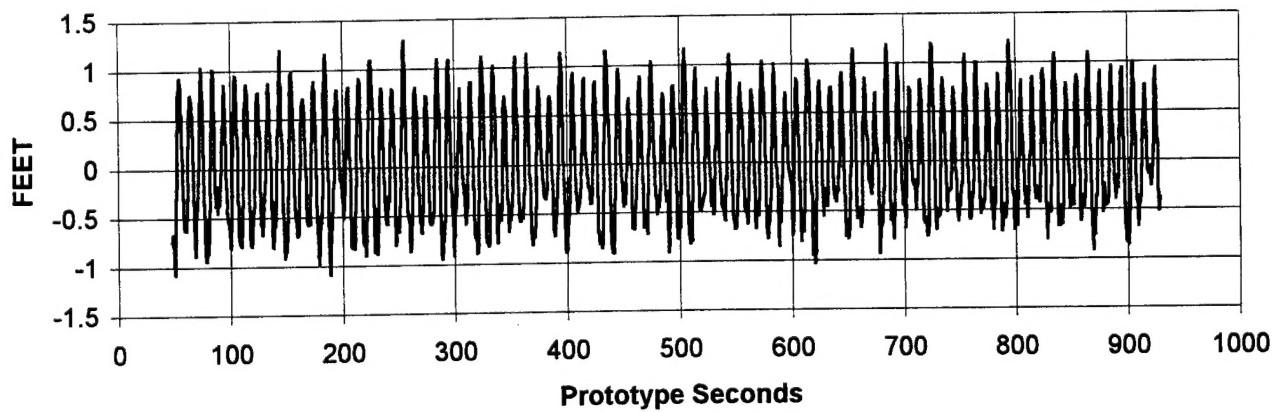
Unfiltered Time History



Filtered Low Frequency Time History

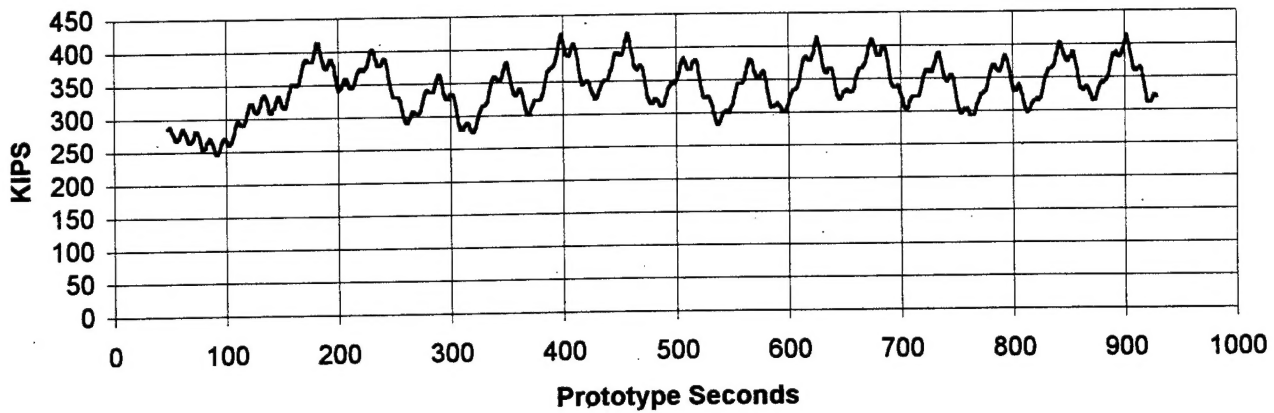


Filtered High Frequency Time History

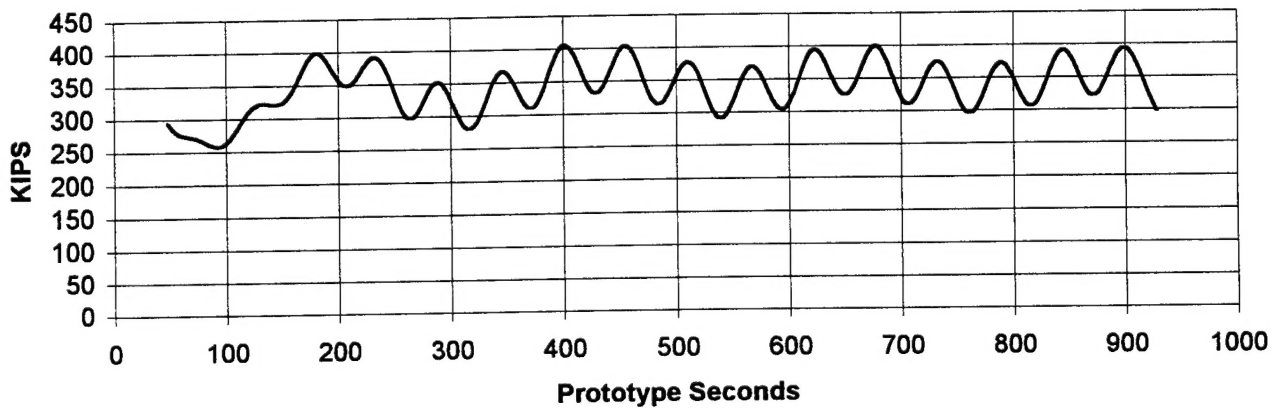


TEST A704 - ML_1 TENSION

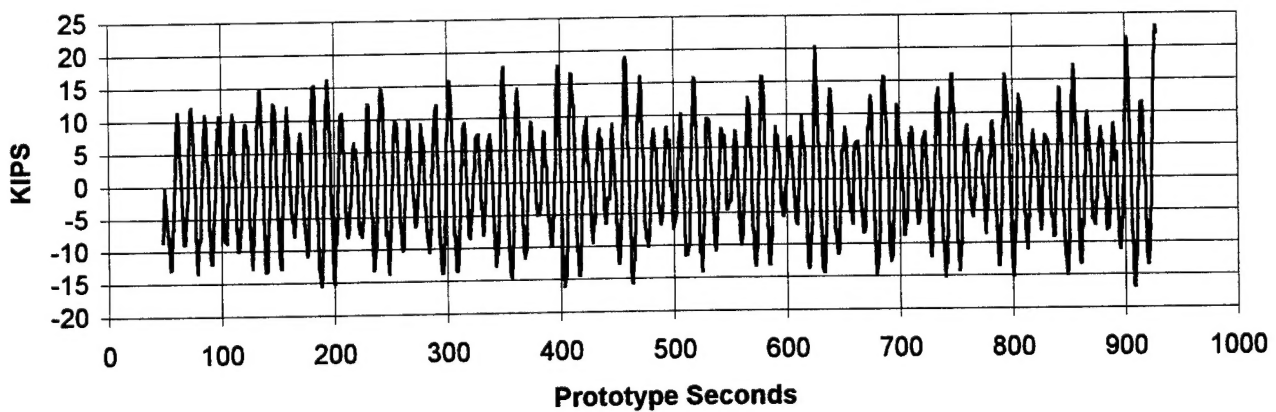
Unfiltered Time History



Filtered Low Frequency Time History

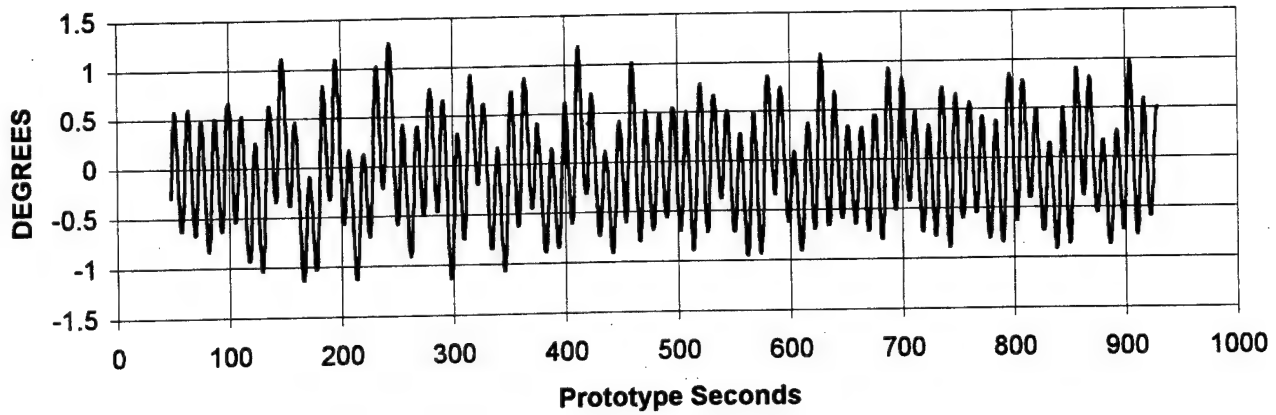


Filtered High Frequency Time History

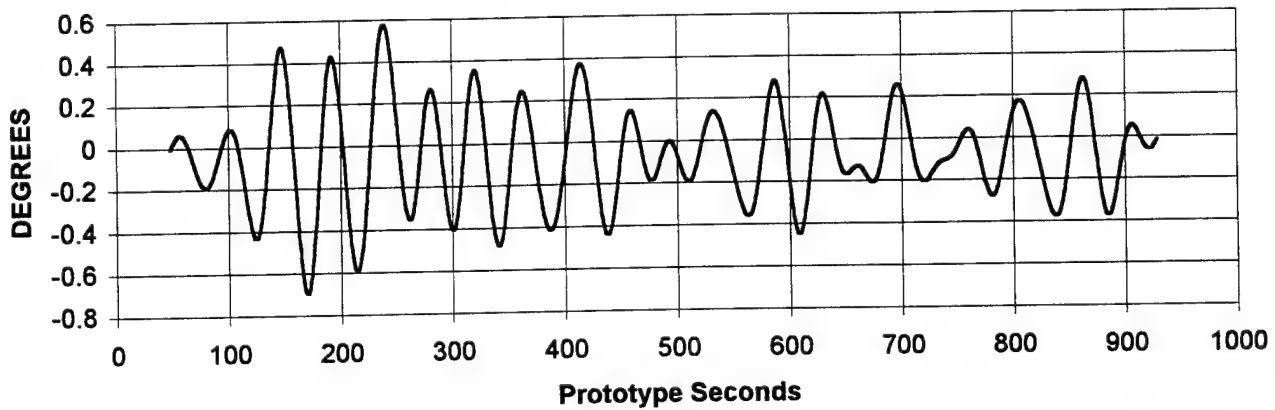


TEST A704 - PITCH

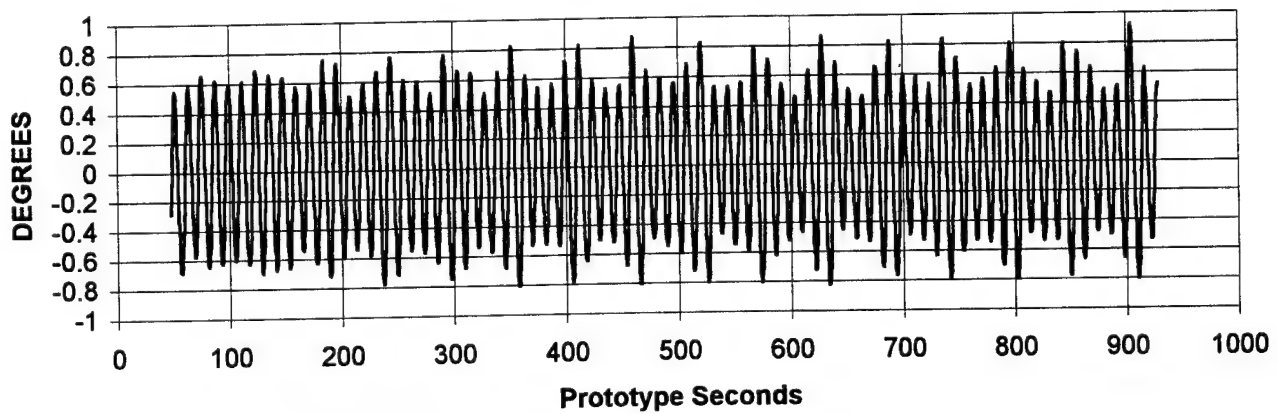
Unfiltered Time History



Filtered Low Frequency Time History

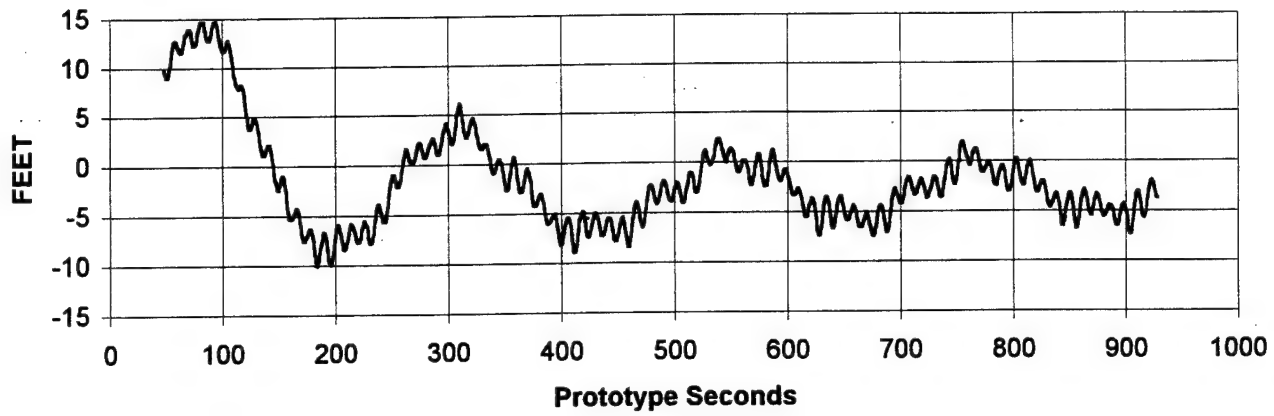


Filtered High Frequency Time History

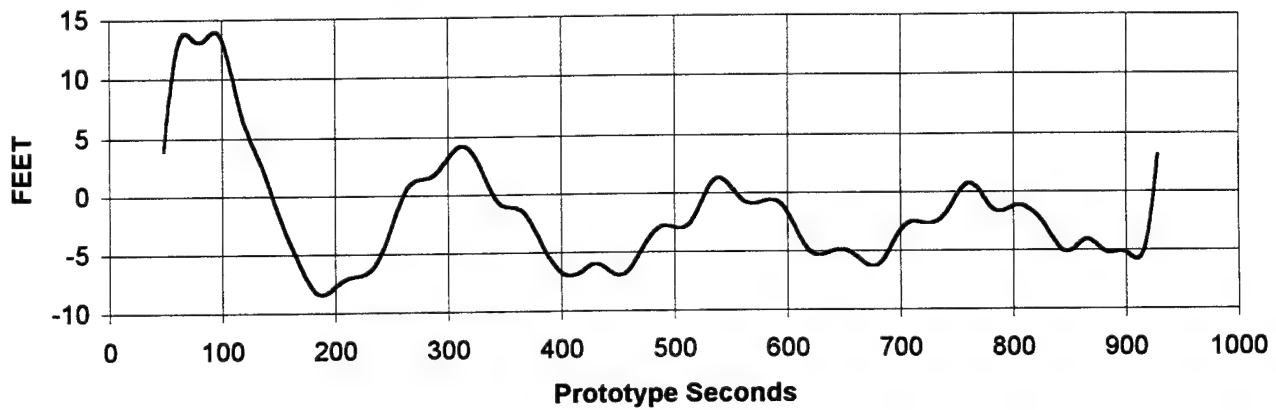


TEST A704 - PT SURGE

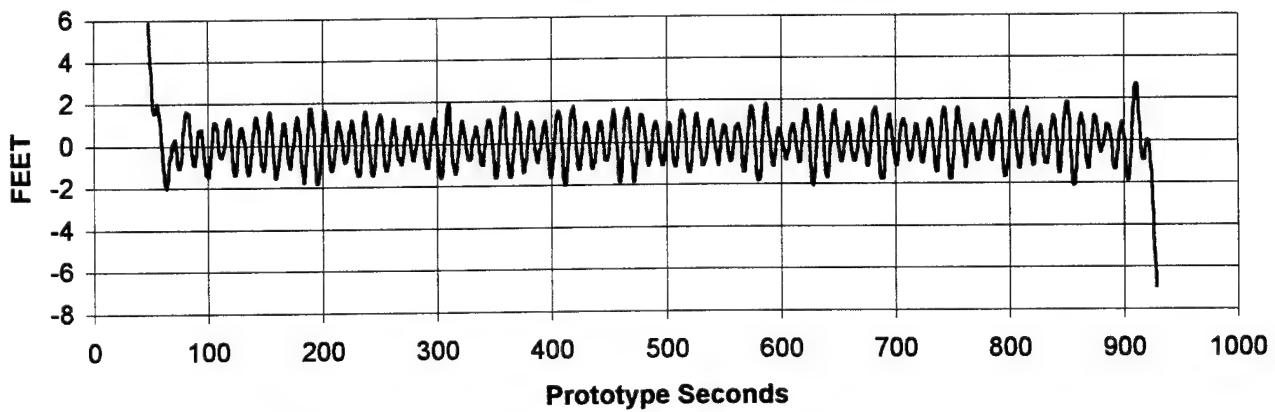
Unfiltered Time History



Filtered Low Frequency Time History

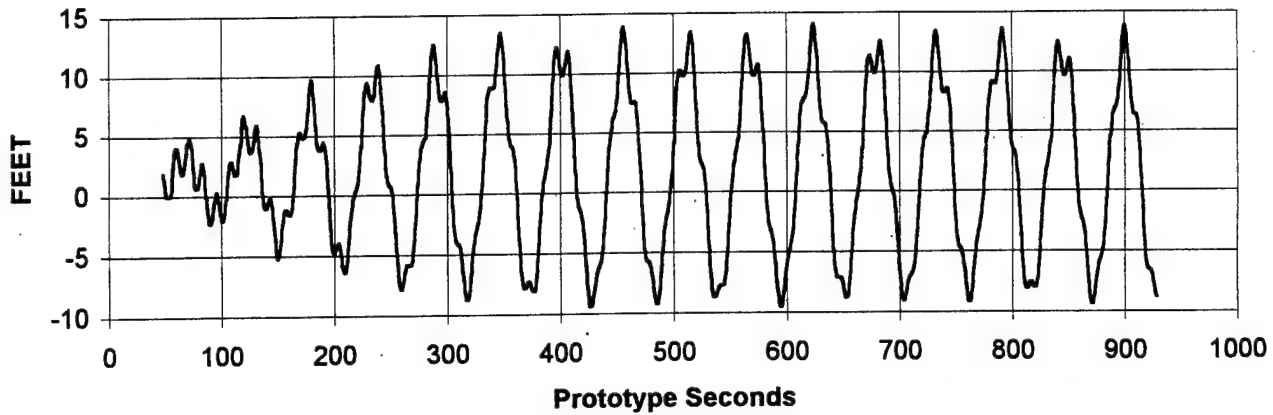


Filtered High Frequency Time History

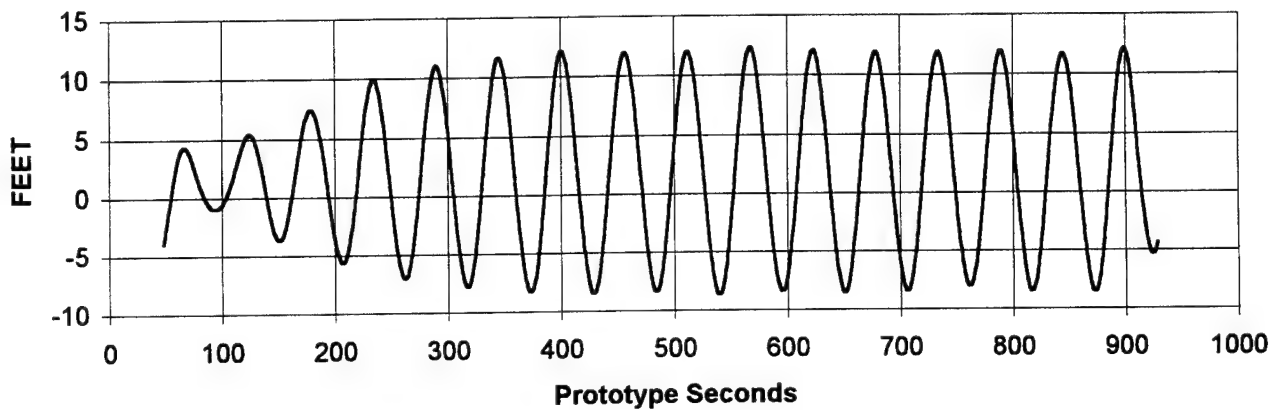


TEST A704 - PT HEAVE

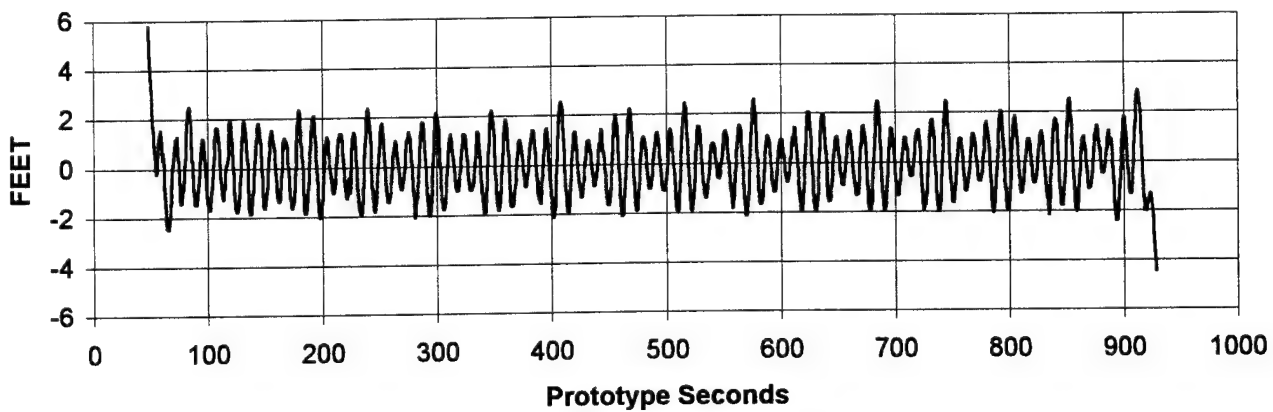
Unfiltered Time History



Filtered Low Frequency Time History

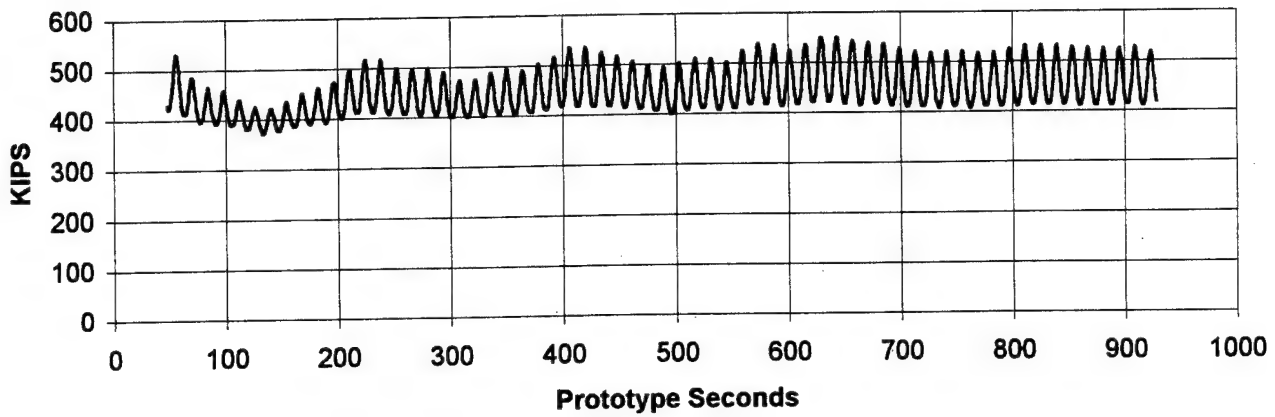


Filtered High Frequency Time History

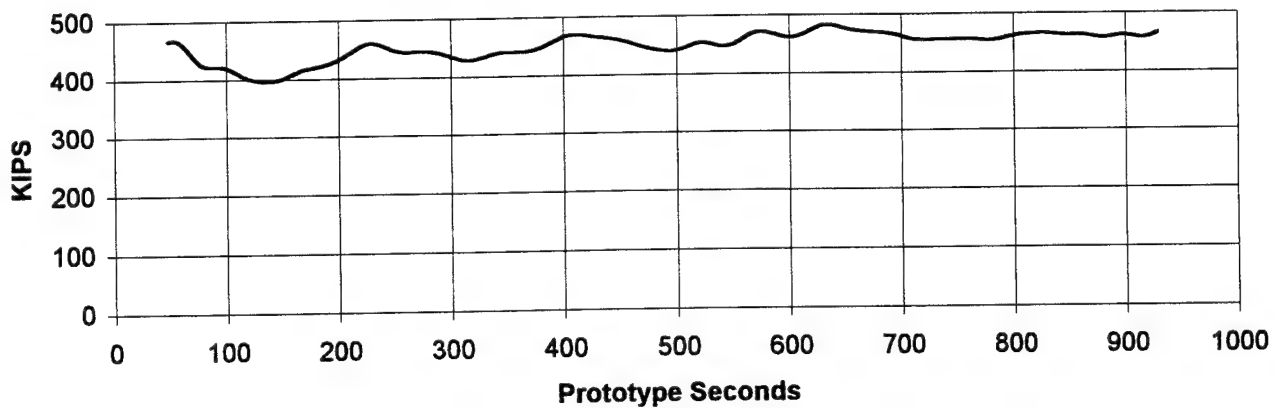


TEST A705 - ML_1 TENSION

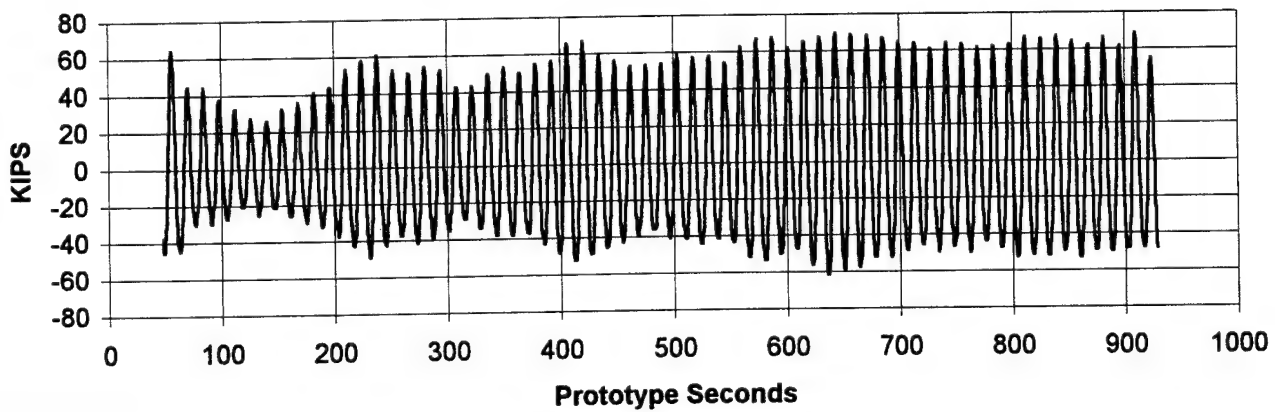
Unfiltered Time History



Filtered Low Frequency Time History

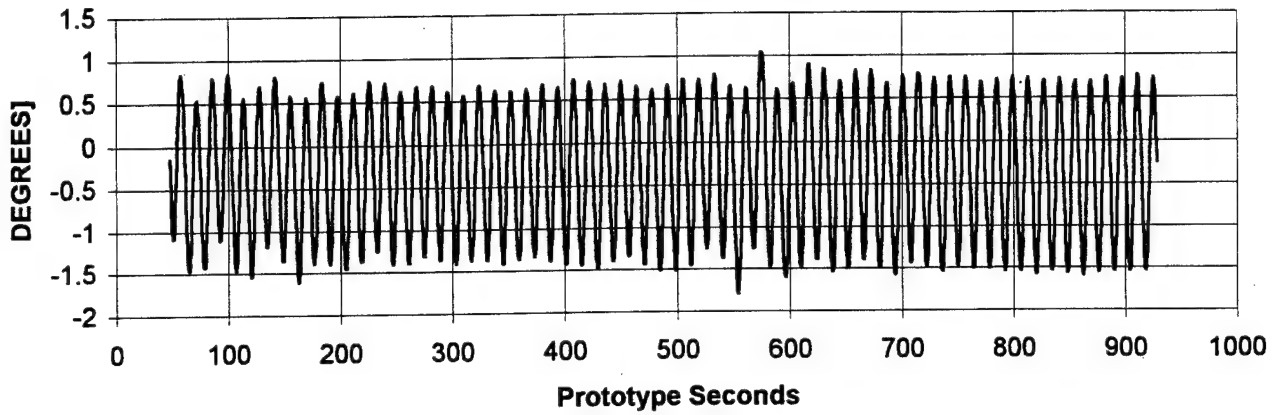


Filtered High Frequency Time History

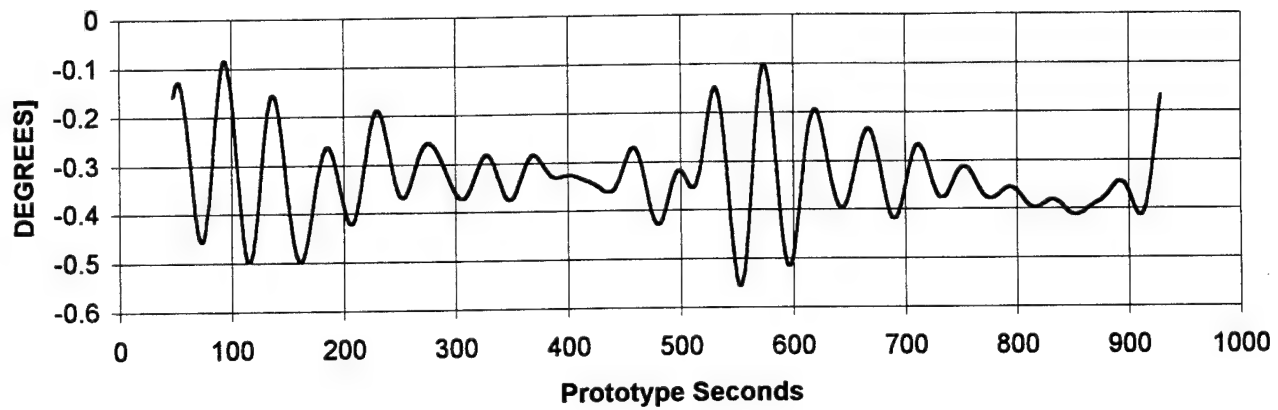


TEST A705 - PITCH

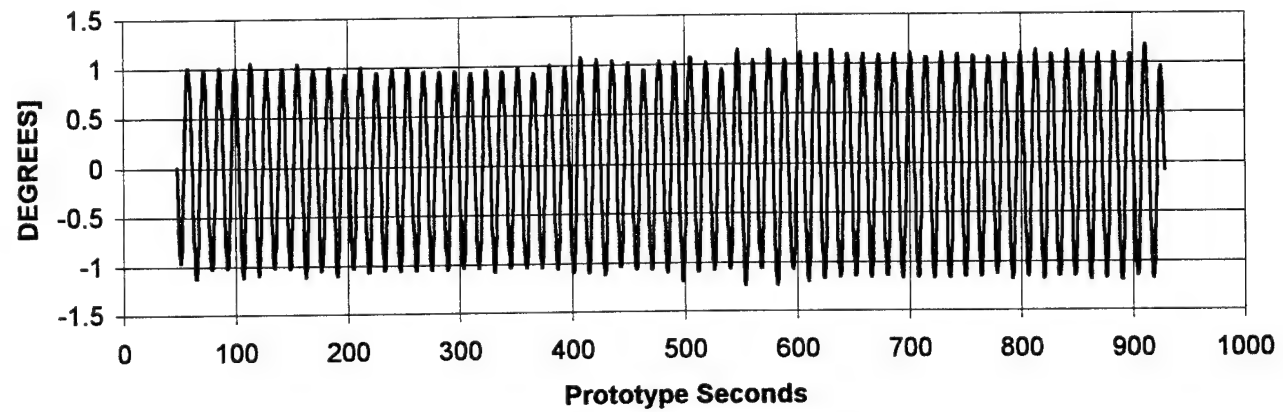
Unfiltered Time History



Filtered Low Frequency Time History

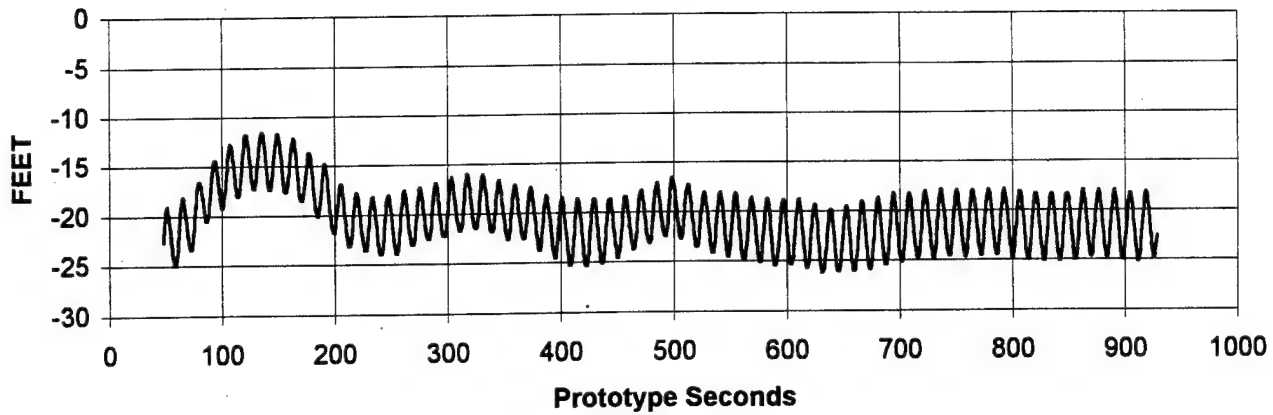


Filtered High Frequency Time History

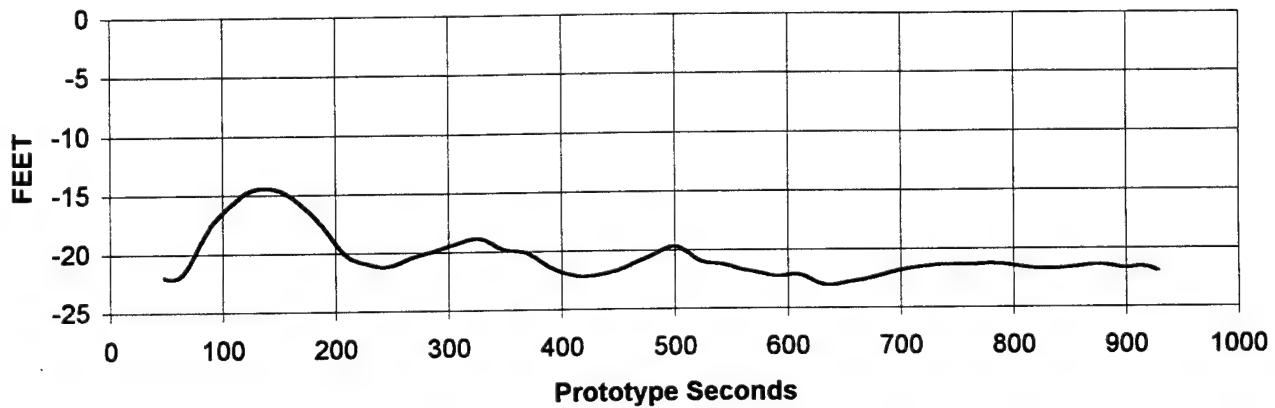


TEST A705 - PT SURGE

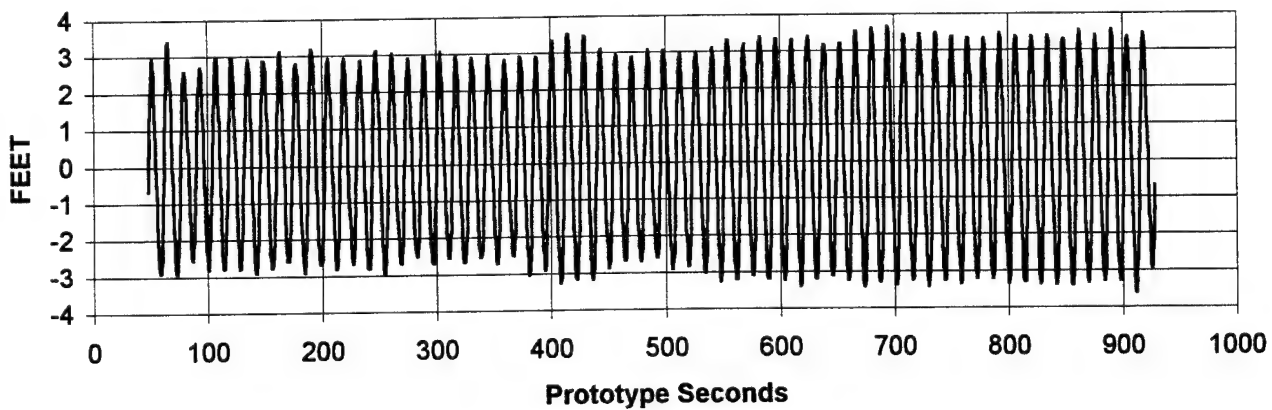
Unfiltered Time History



Filtered Low Frequency Time History

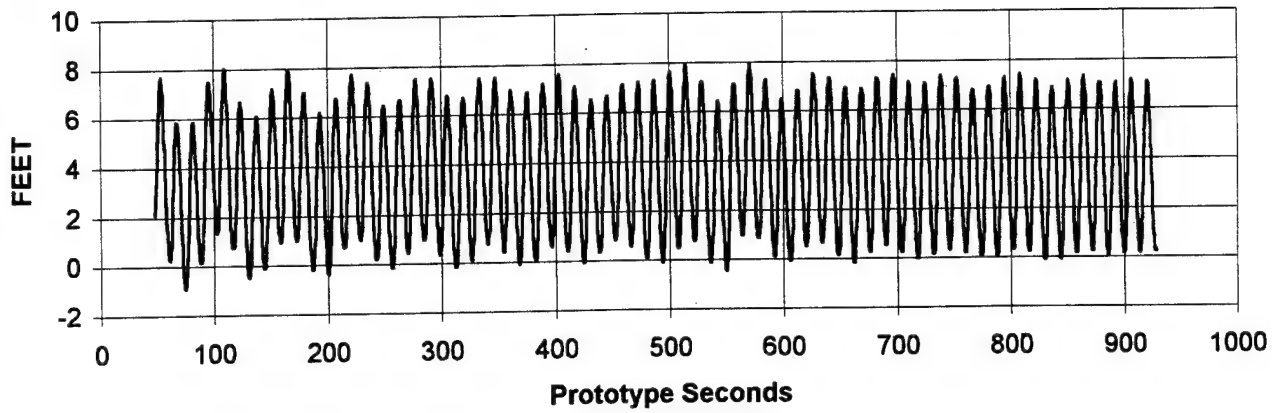


Filtered High Frequency Time History

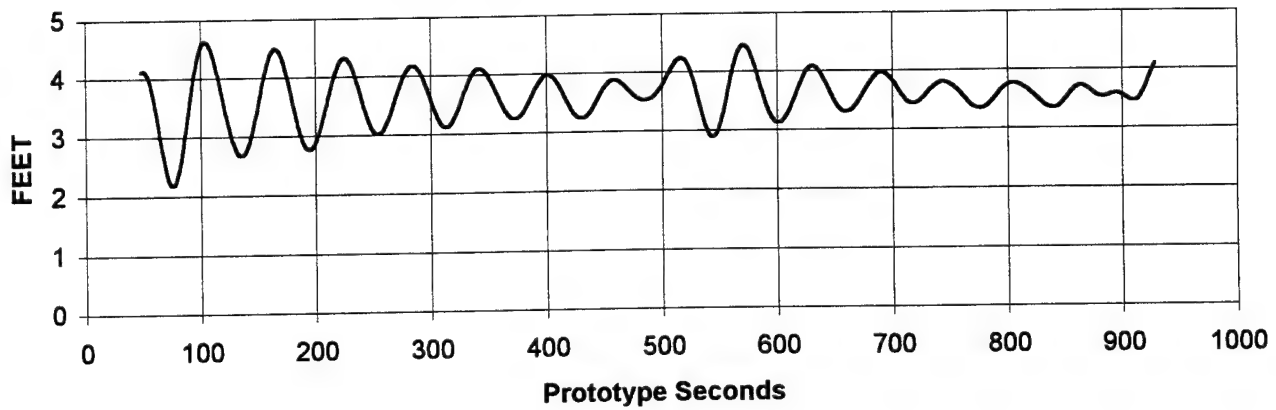


TEST A705 - PT HEAVE

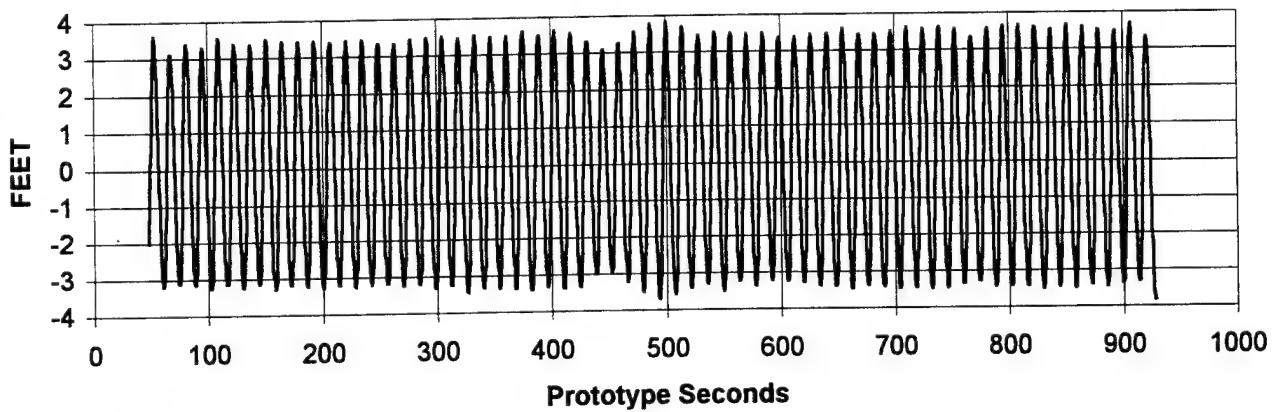
Unfiltered Time History



Filtered Low Frequency Time History

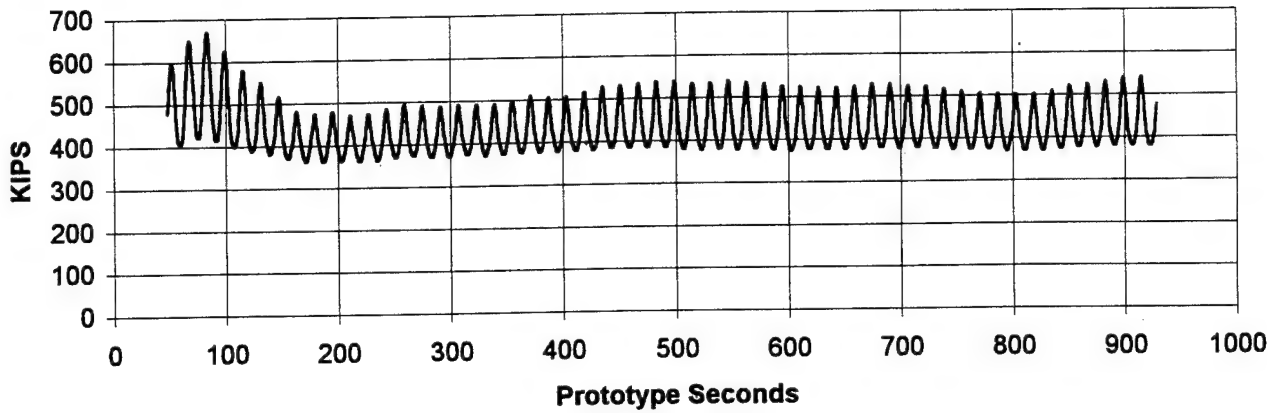


Filtered High Frequency Time History

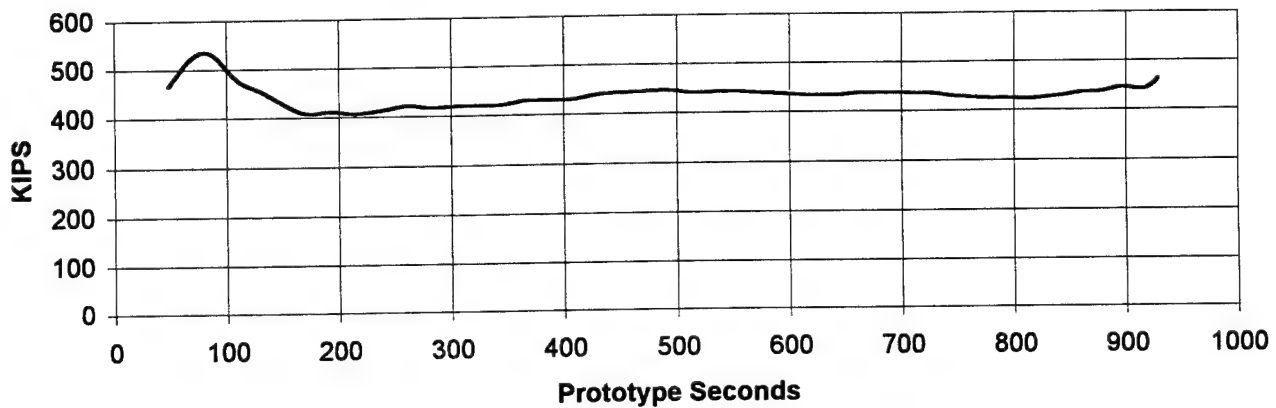


TEST A706 - ML_1 TENSION

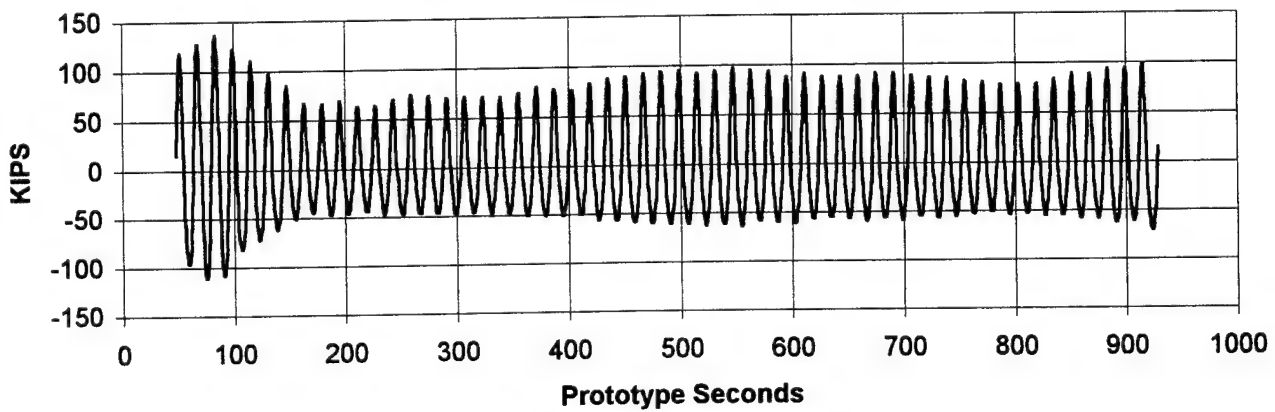
Unfiltered Time History



Filtered Low Frequency Time History

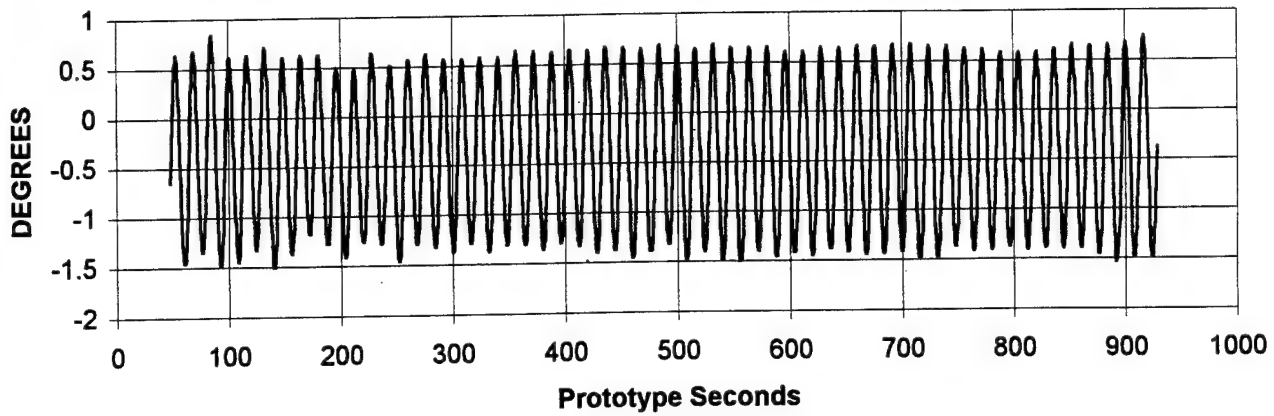


Filtered High Frequency Time History

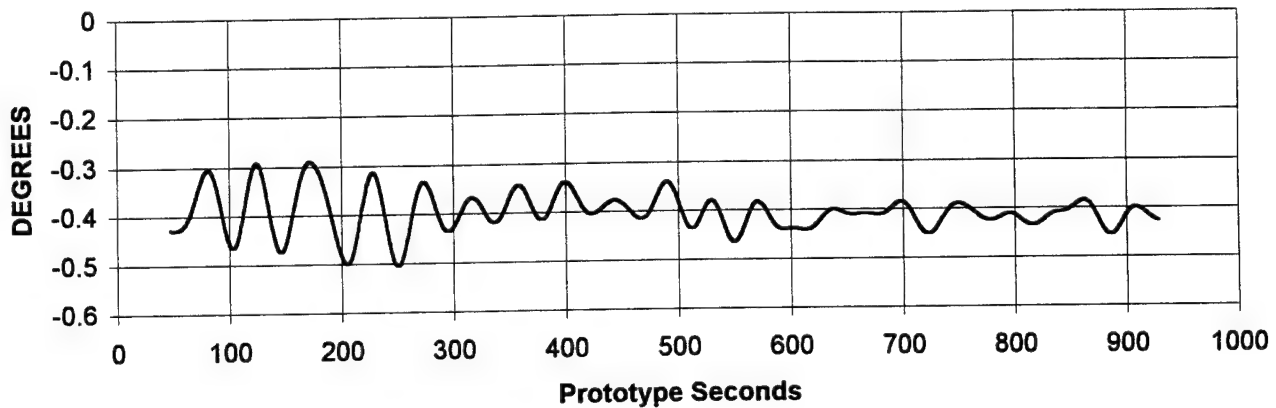


TEST A706 - PITCH

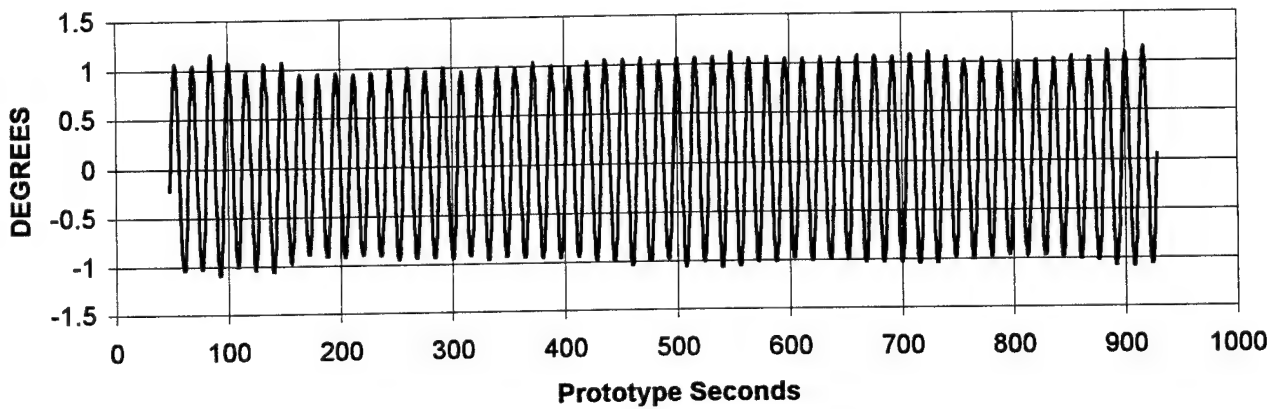
Unfiltered Time History



Filtered Low Frequency Time History

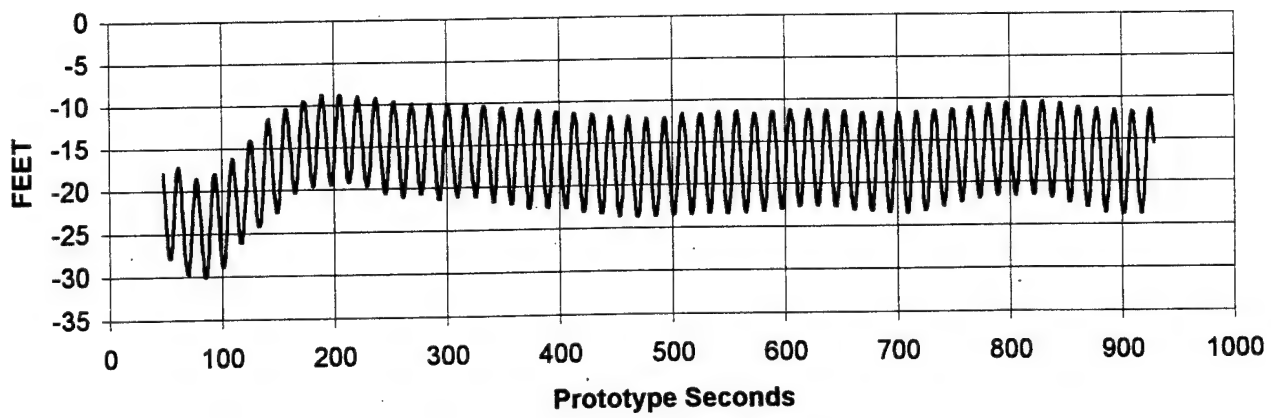


Filtered High Frequency Time History

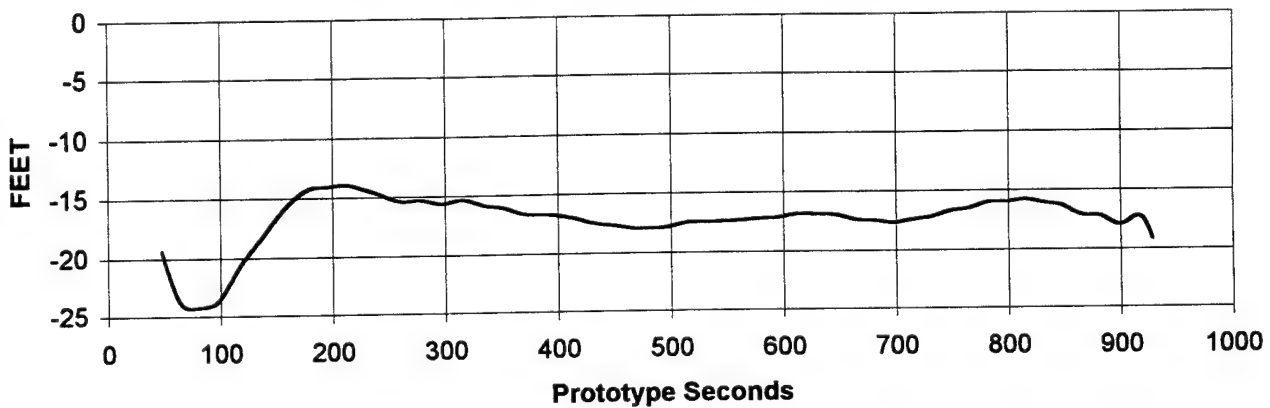


TEST A706 - PT SURGE

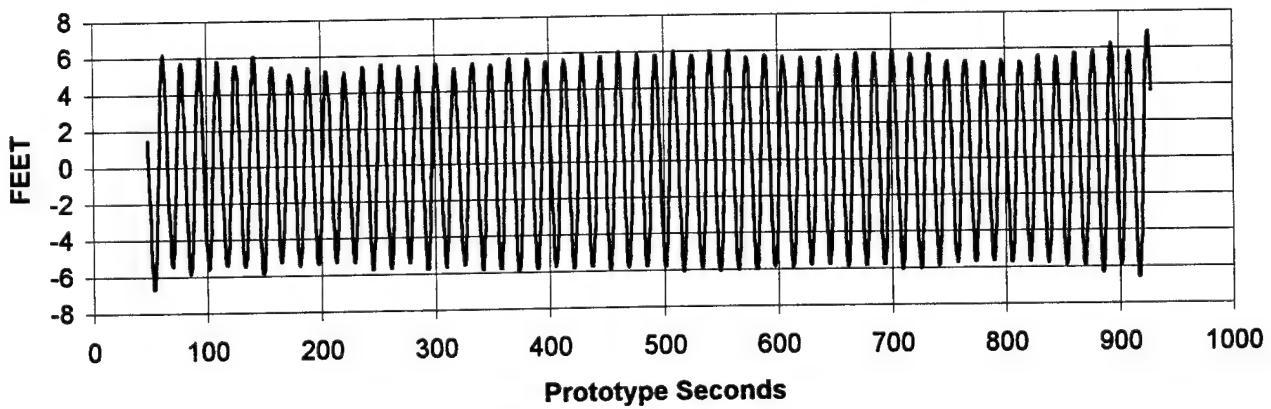
Unfiltered Time History



Filtered Low Frequency Time History

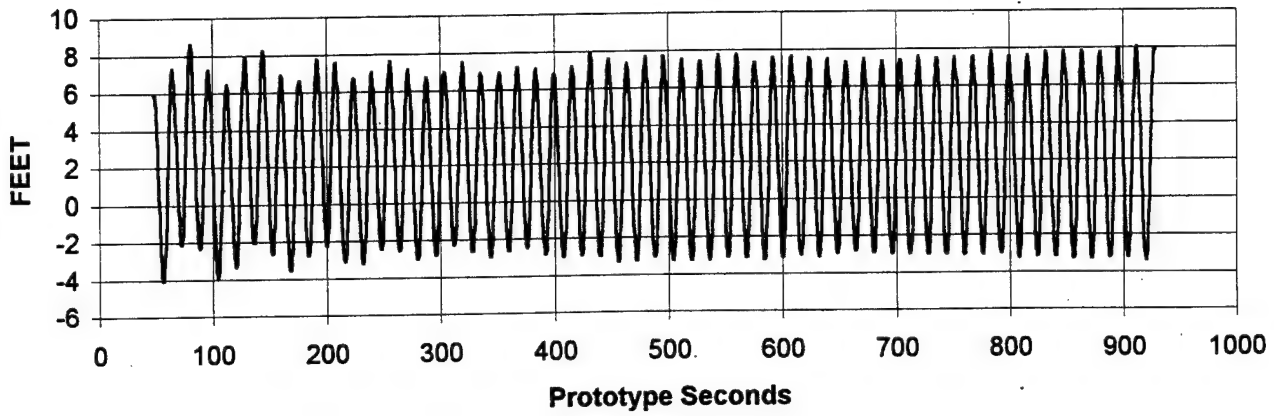


Filtered High Frequency Time History

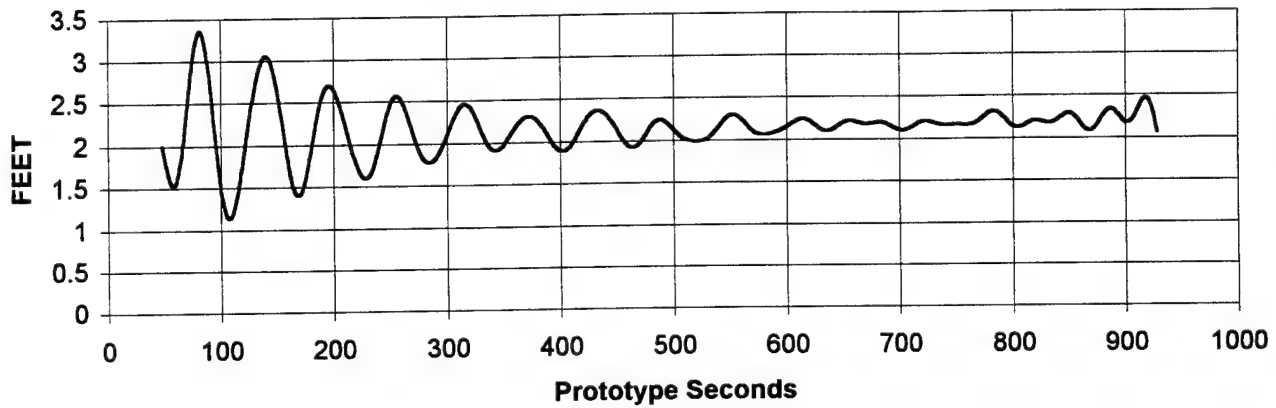


TEST A706 - PT HEAVE

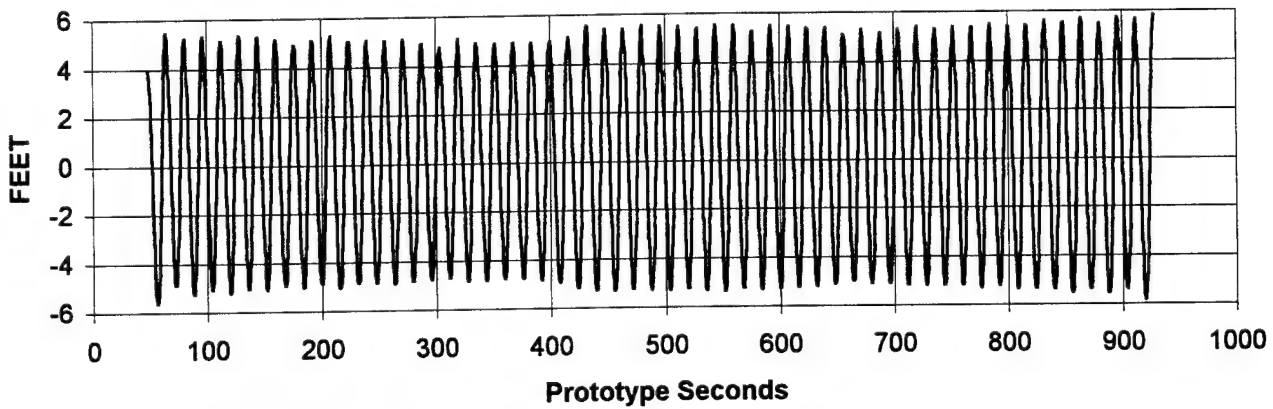
Unfiltered Time History



Filtered Low Frequency Time History

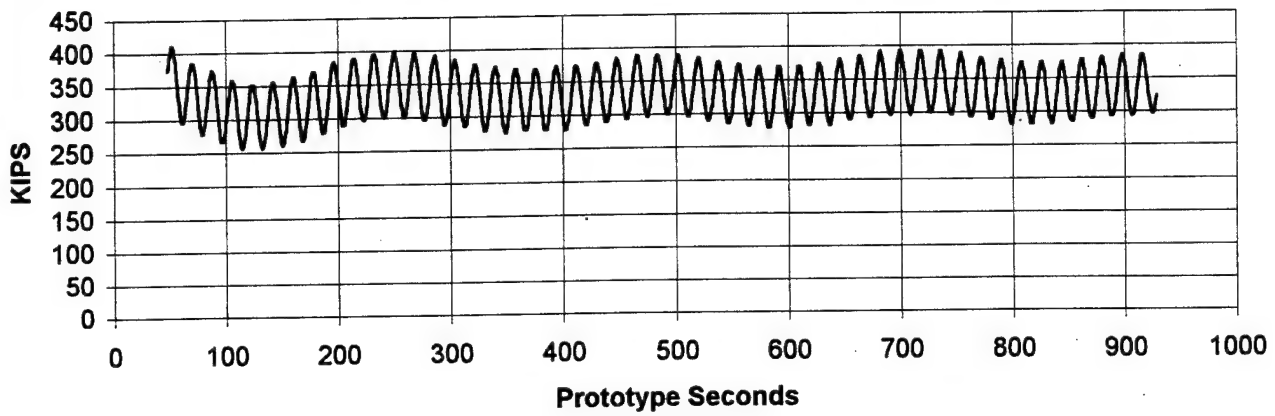


Filtered High Frequency Time History

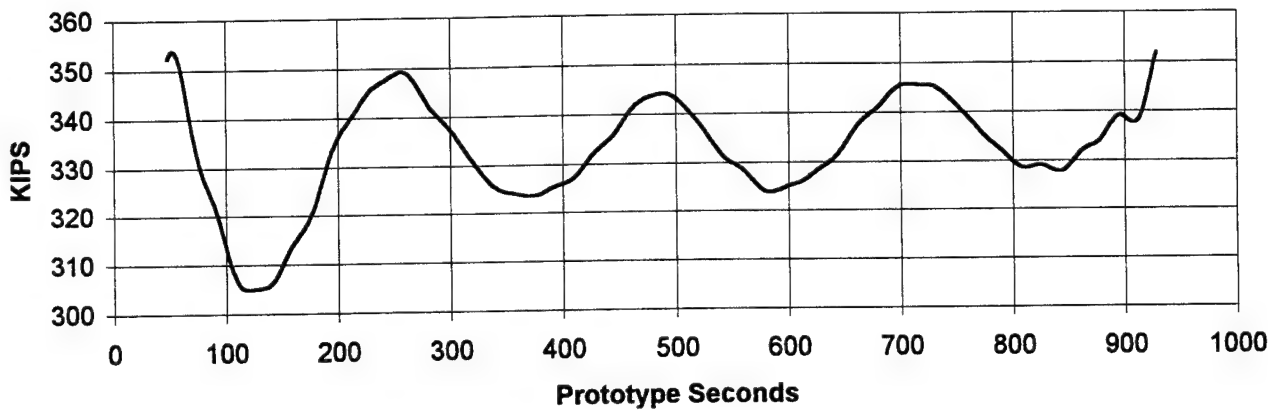


TEST A707 - ML_1 TENSION

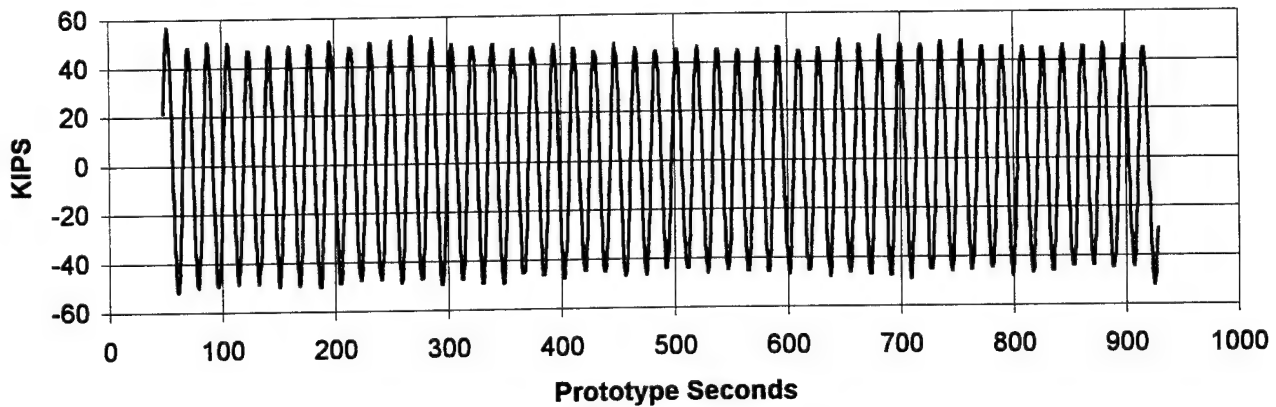
Unfiltered Time History



Filtered Low Frequency Time History

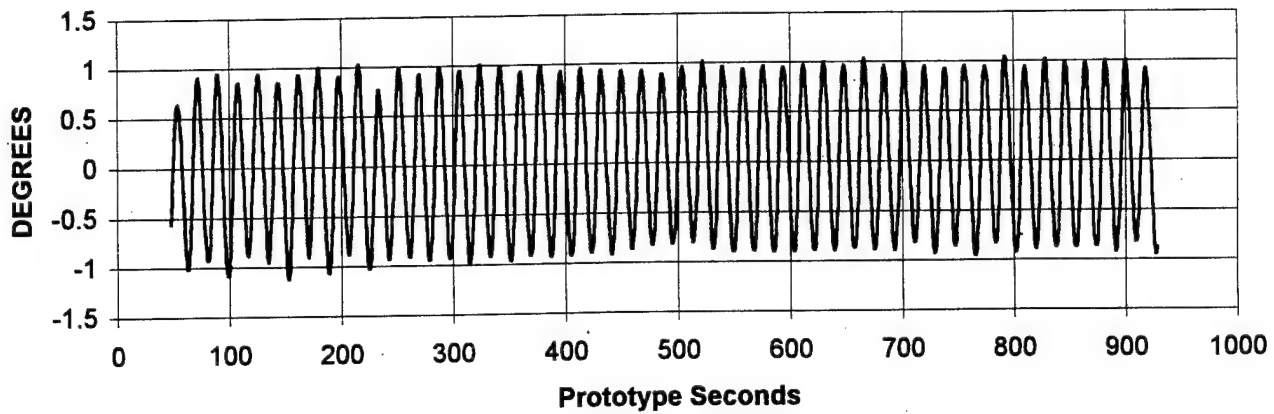


Filtered High Frequency Time History

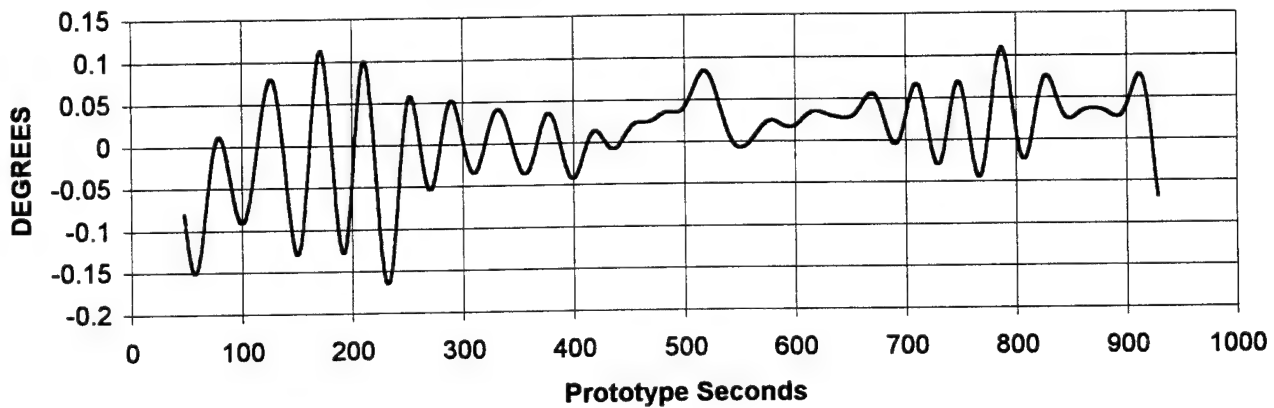


TEST A707 - PITCH

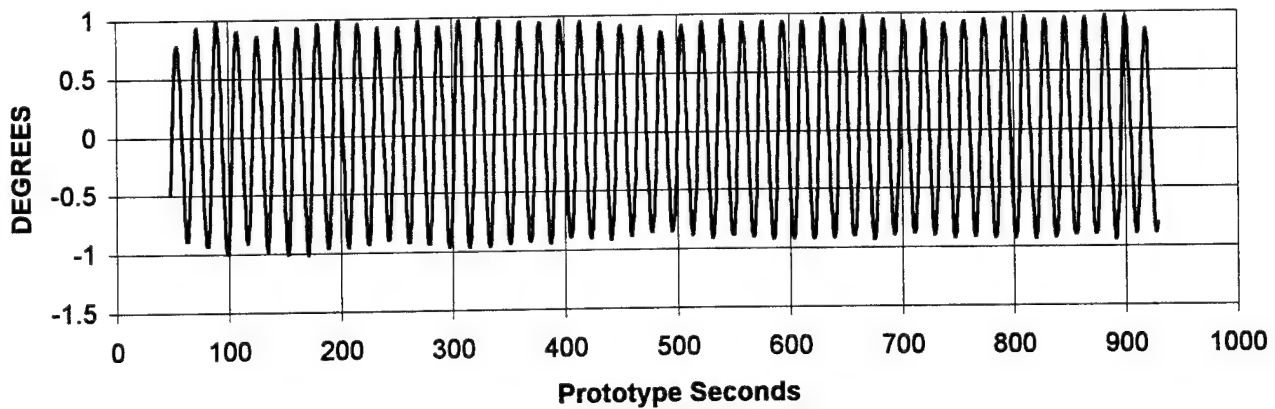
Unfiltered Time History



Filtered Low Frequency Time History

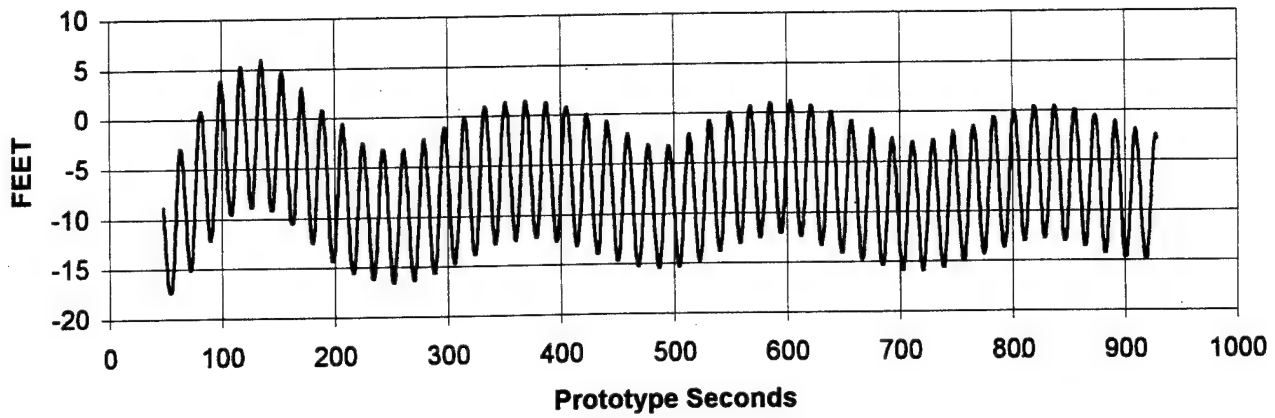


Filtered High Frequency Time History

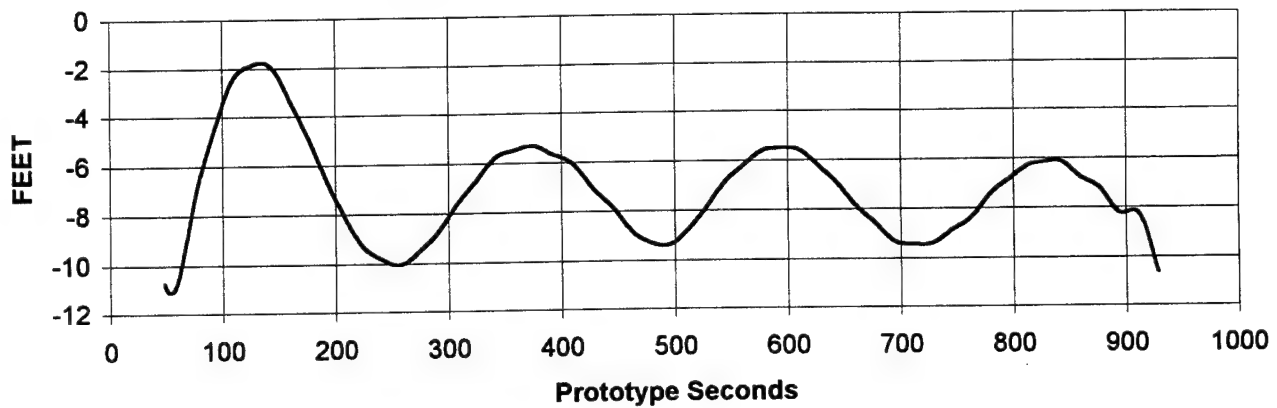


TEST A707 - PT SURGE

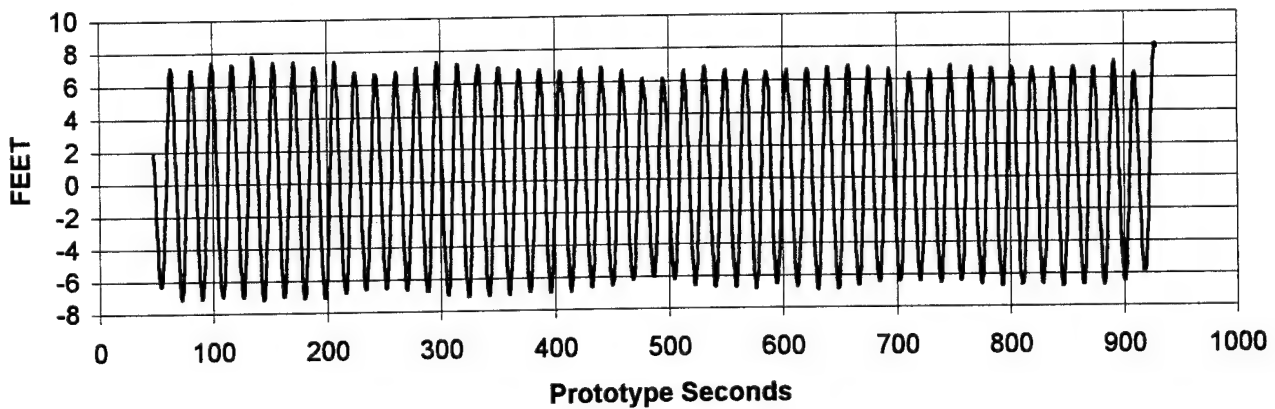
Unfiltered Time History



Filtered Low Frequency Time History

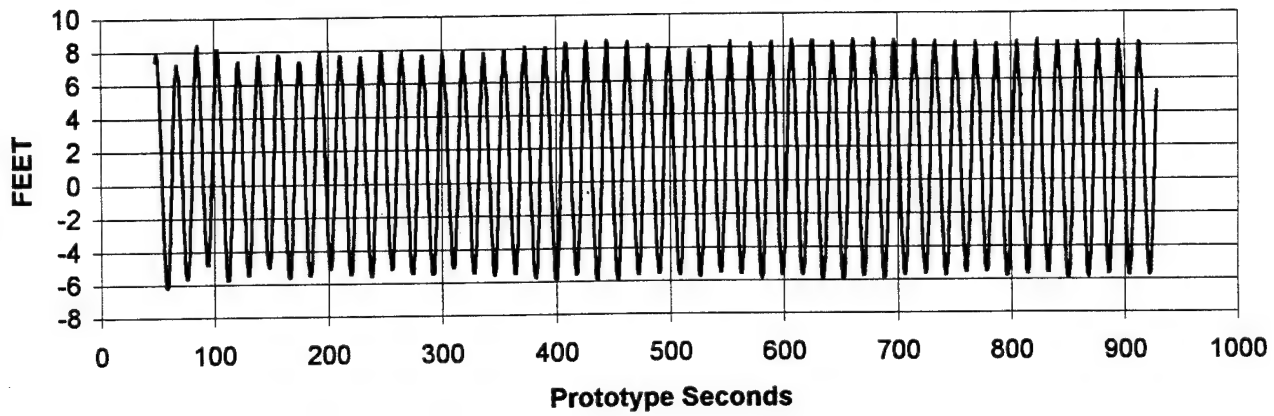


Filtered High Frequency Time History

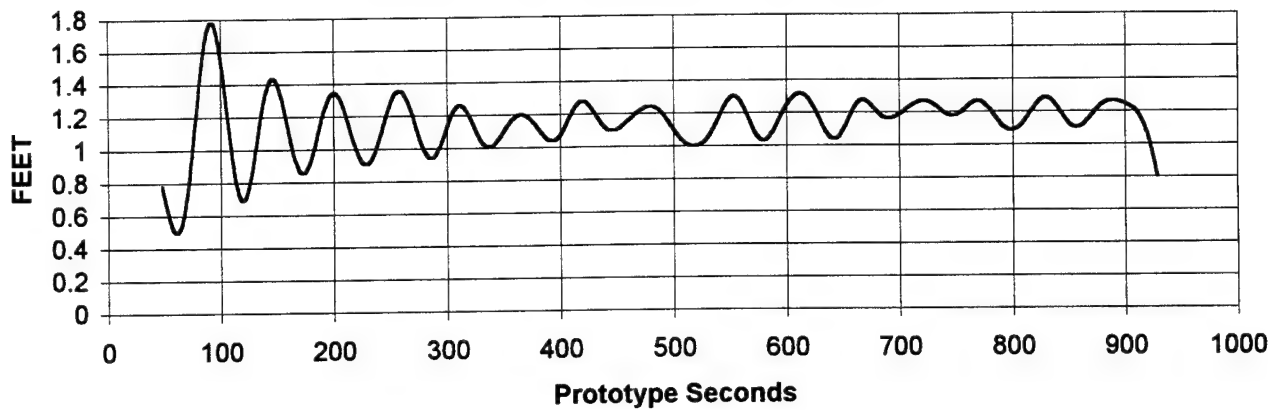


TEST A707 - PT HEAVE

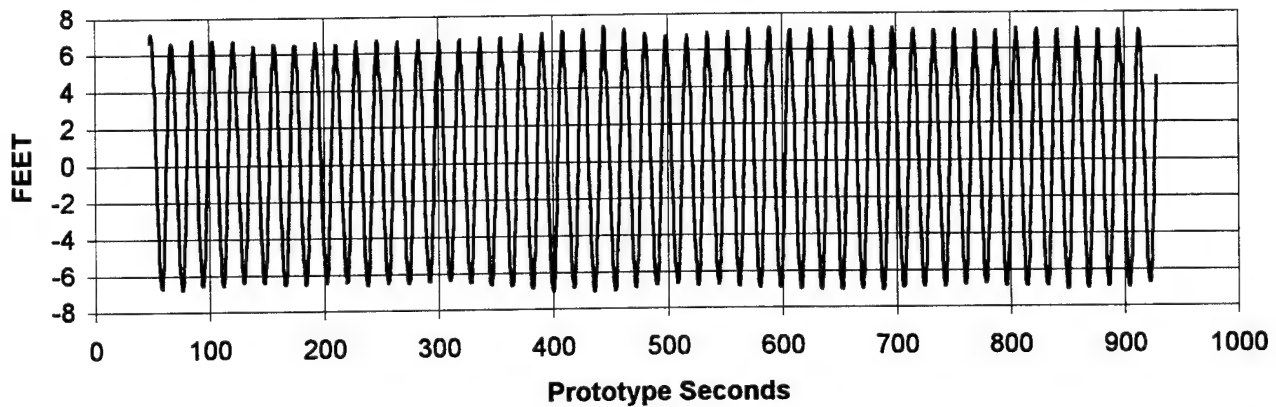
Unfiltered Time History



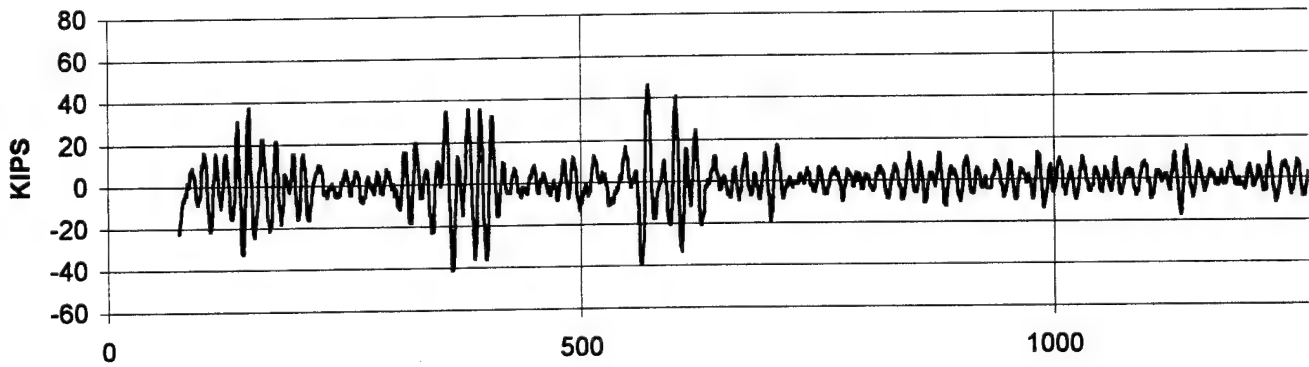
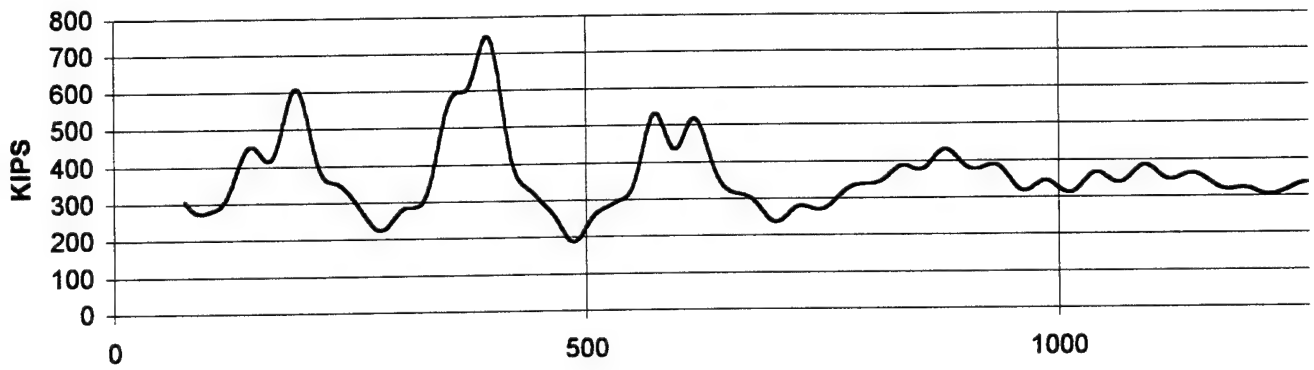
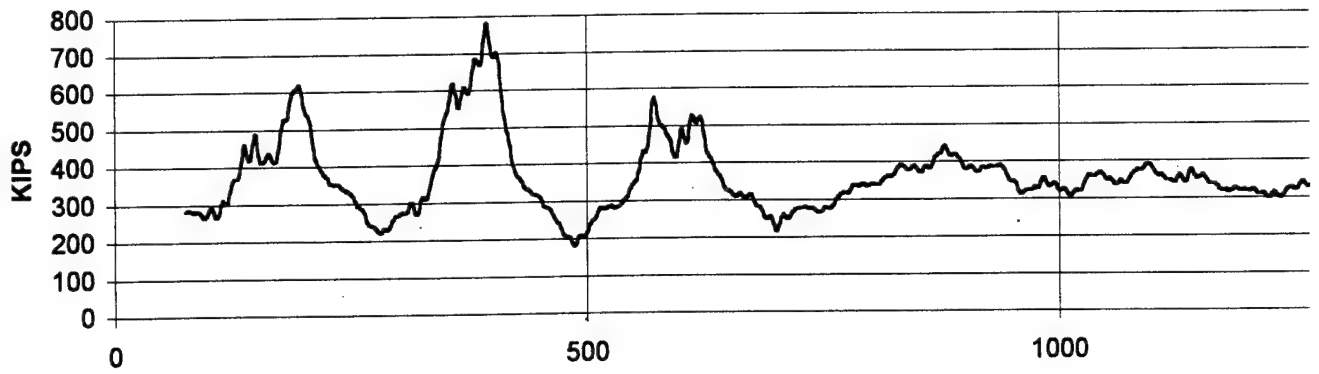
Filtered Low Frequency Time History



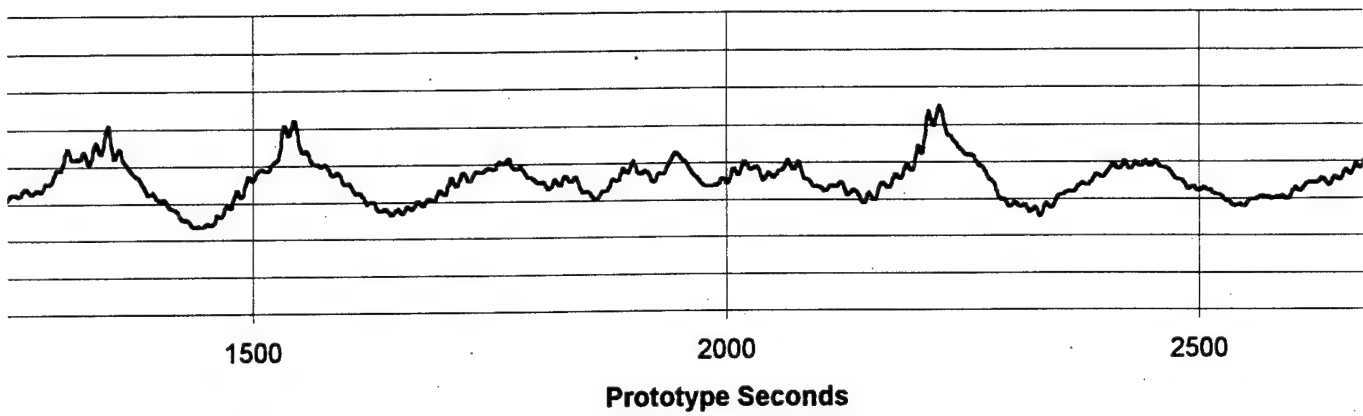
Filtered High Frequency Time History



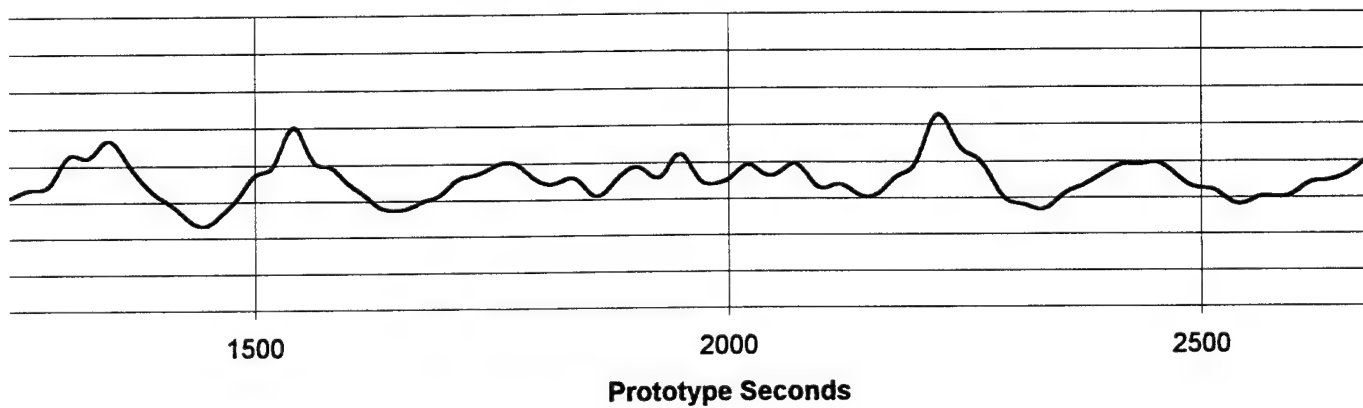
TEST A708 - ML_1 TENSION



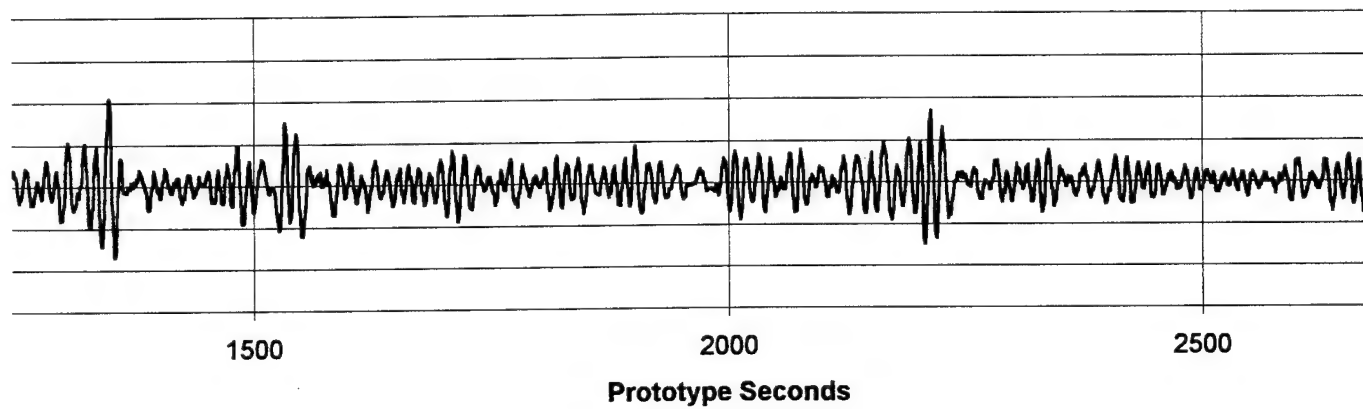
Unfiltered Time History



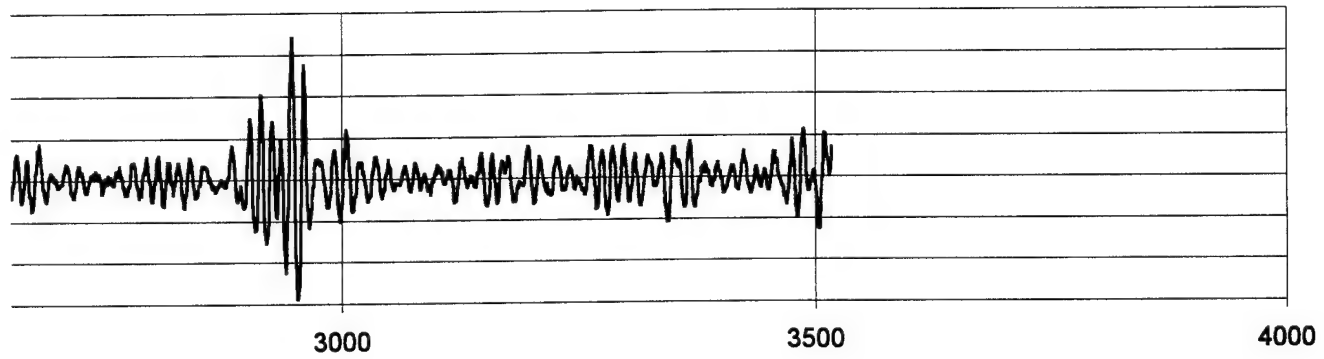
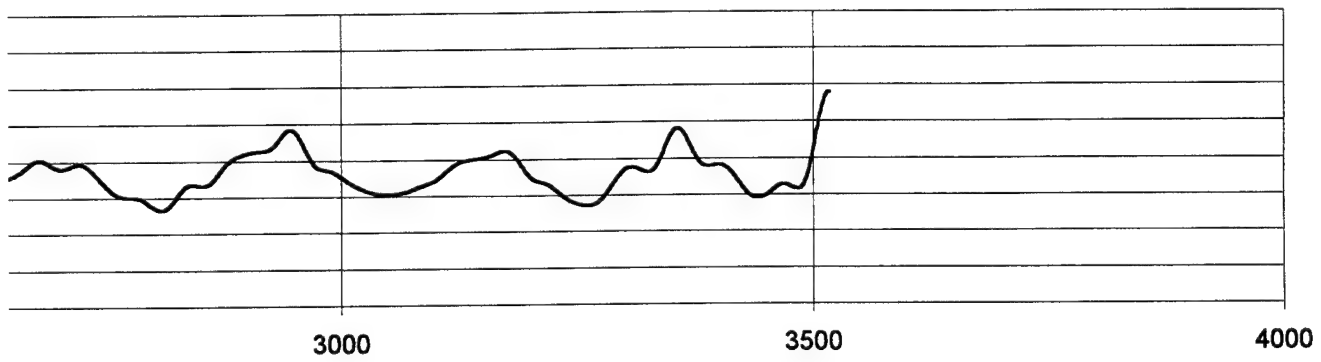
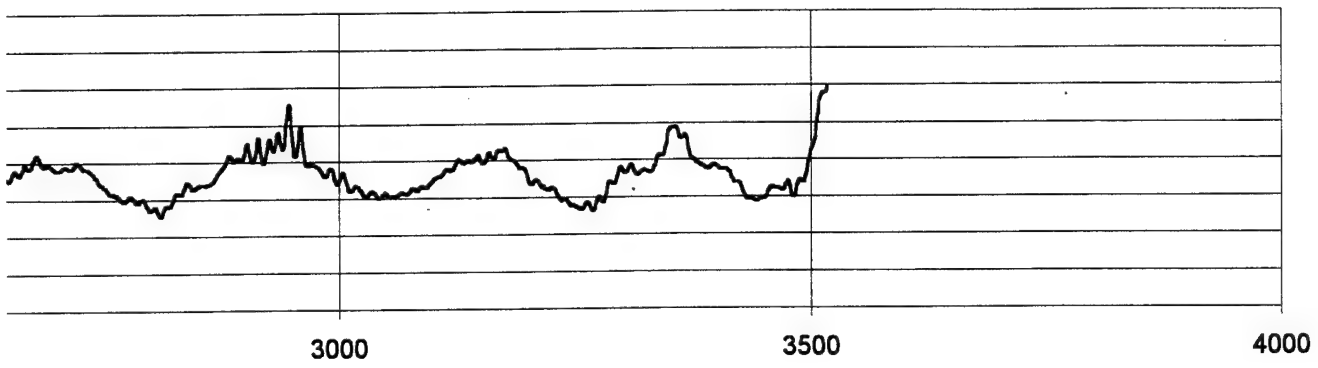
Filtered Low Frequency Time History



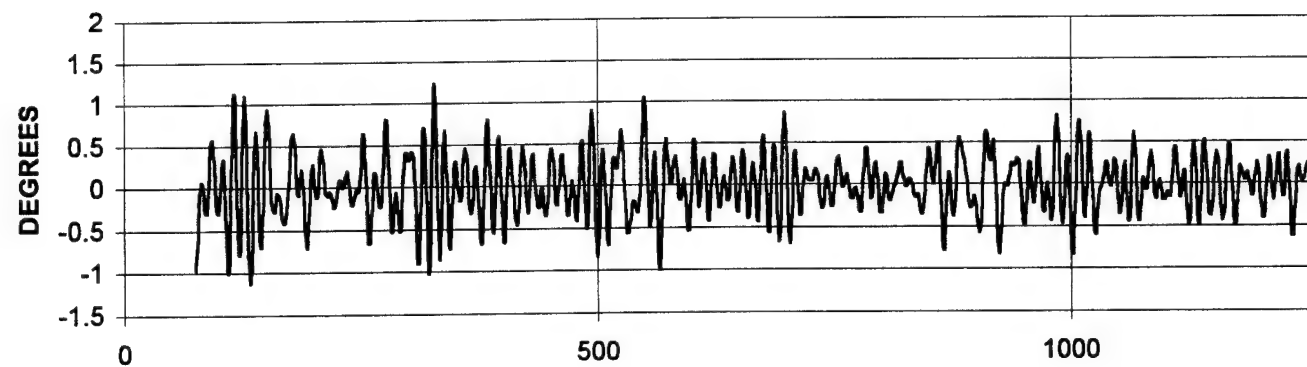
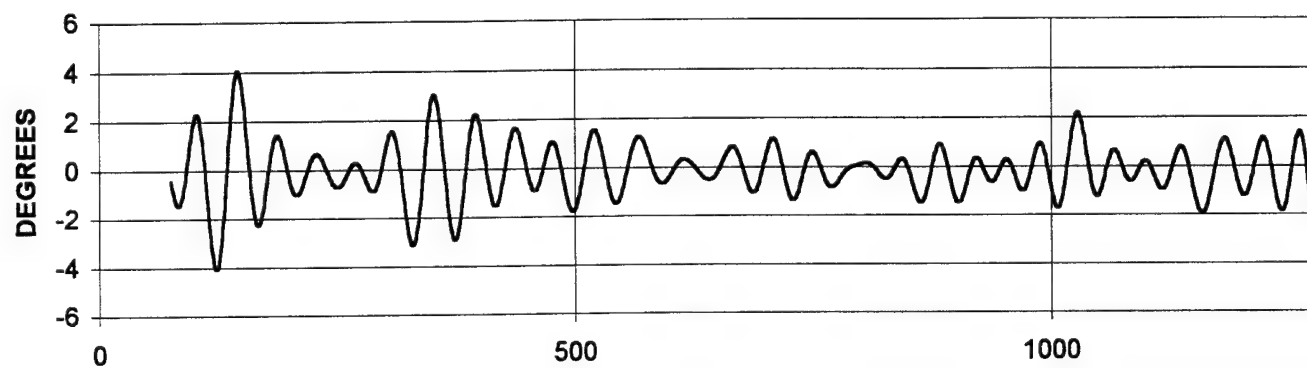
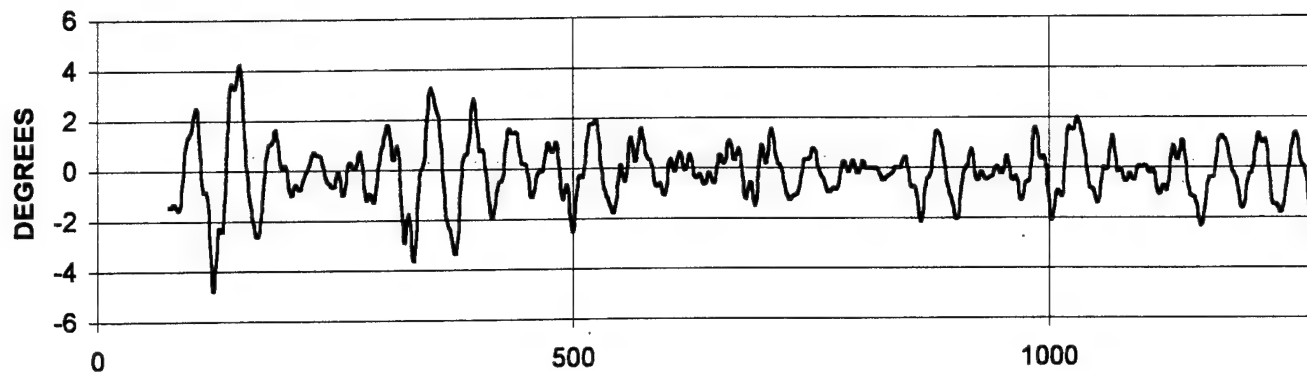
Filtered High Frequency Time History



TEST A708 - ML_1 TENSION

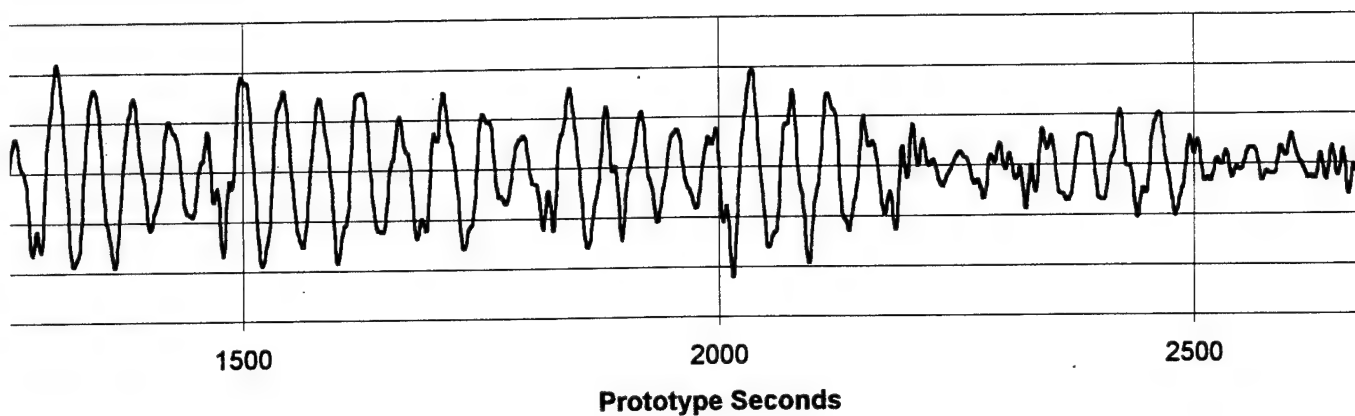


TEST A708 - PITCH

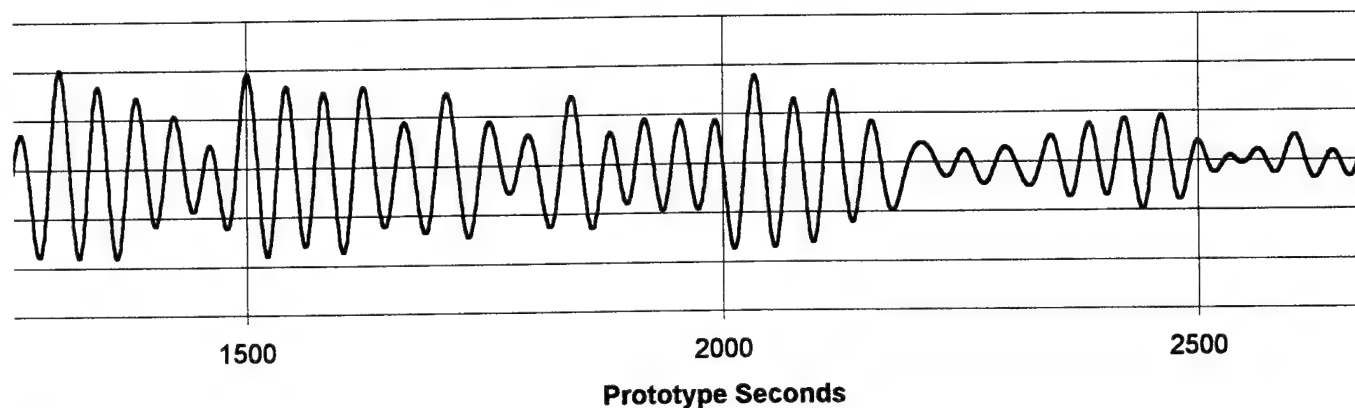


TEST A708 - PITCH

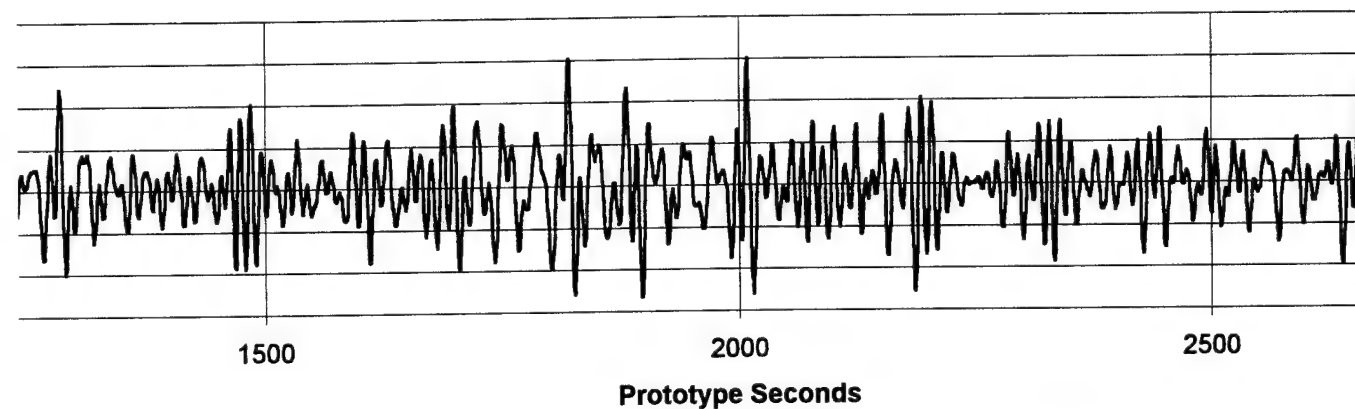
Unfiltered Time History



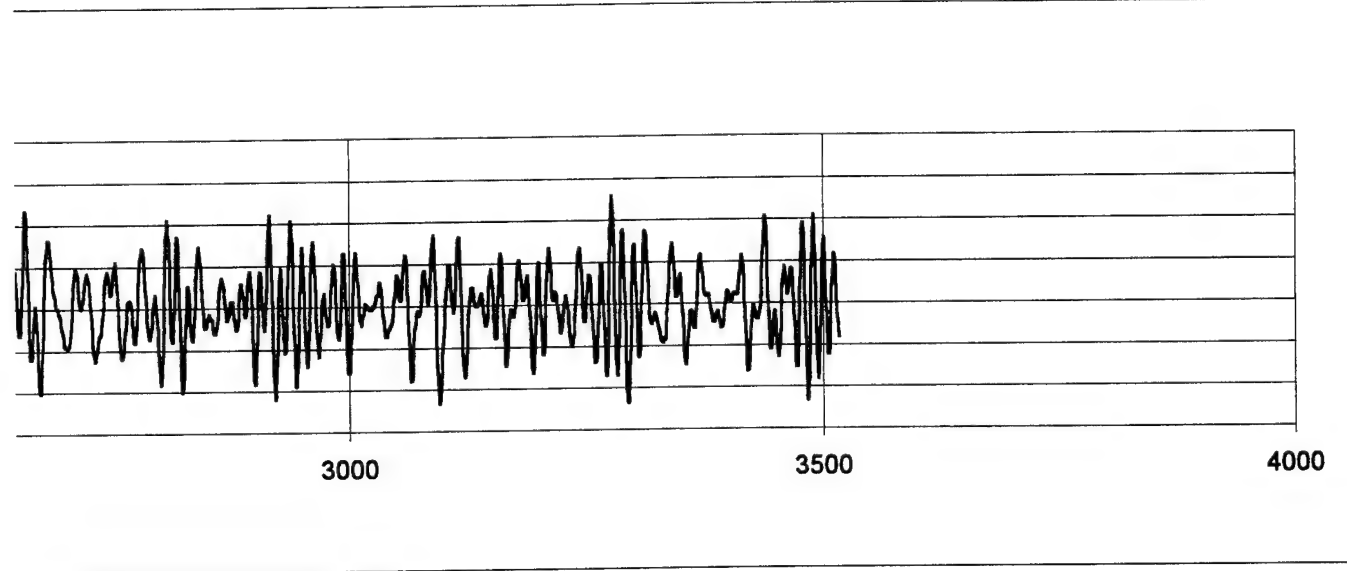
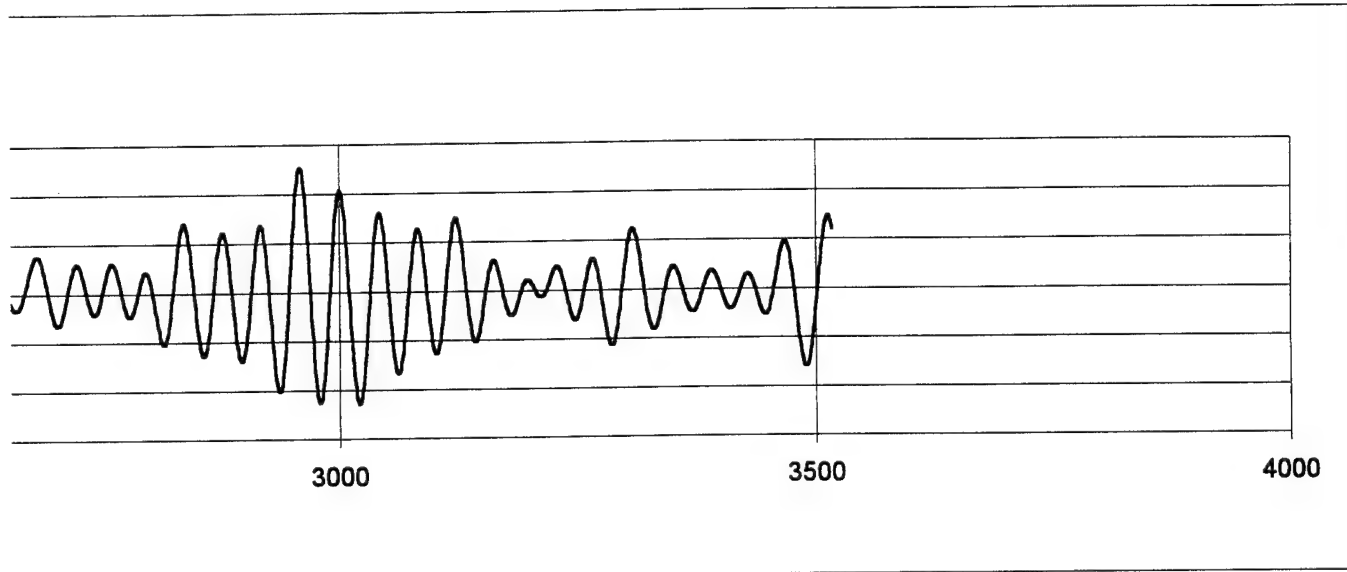
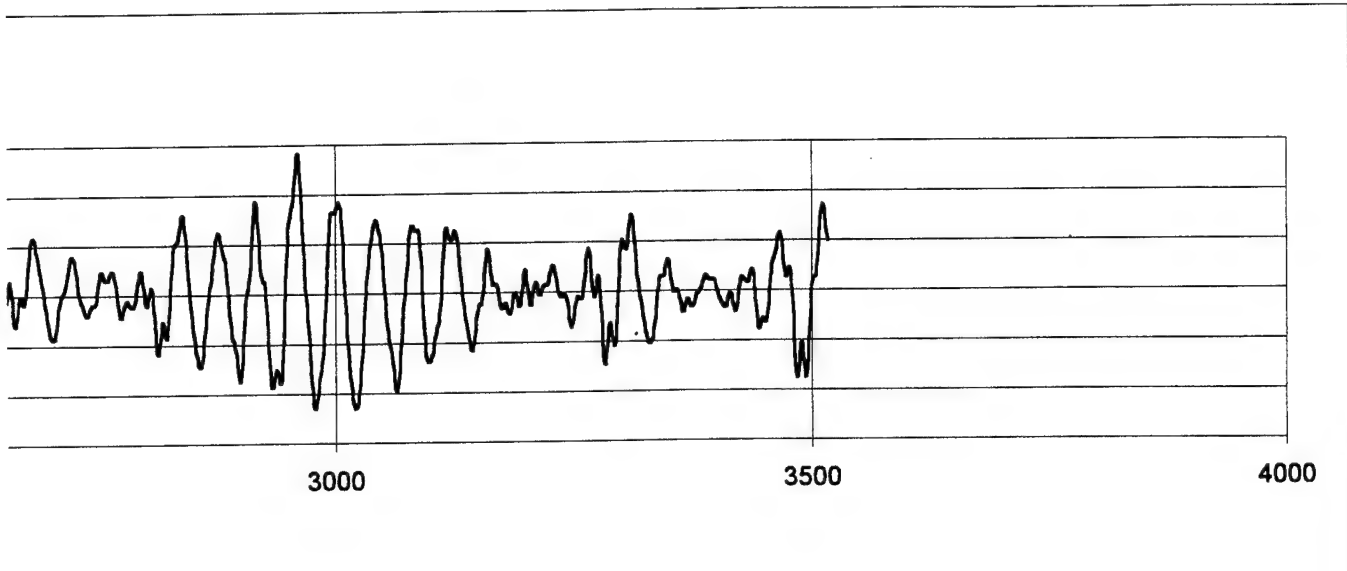
Filtered Low Frequency Time History



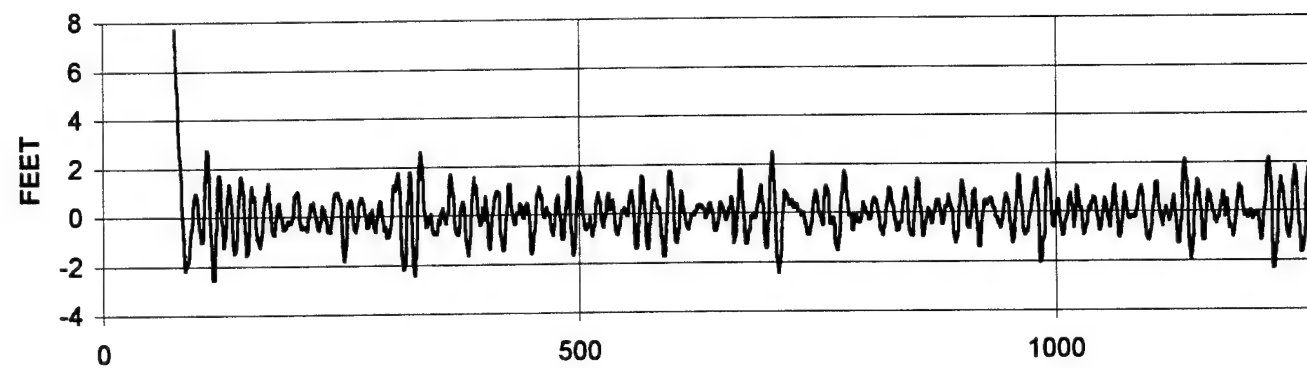
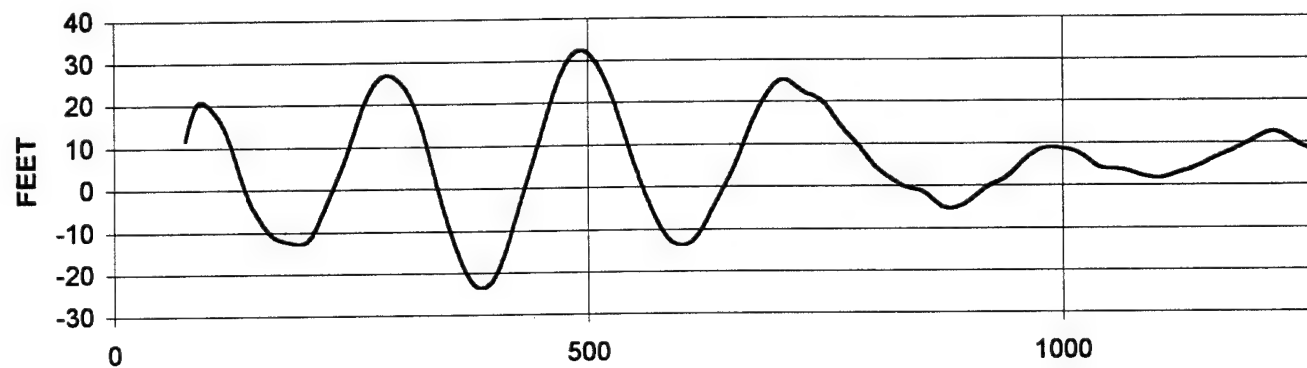
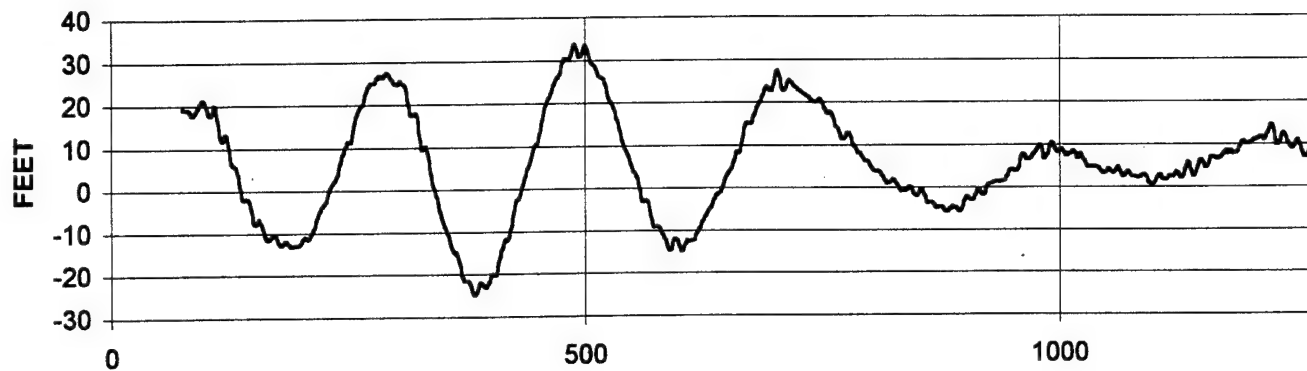
Filtered High Frequency Time History



TEST A708 - PITCH

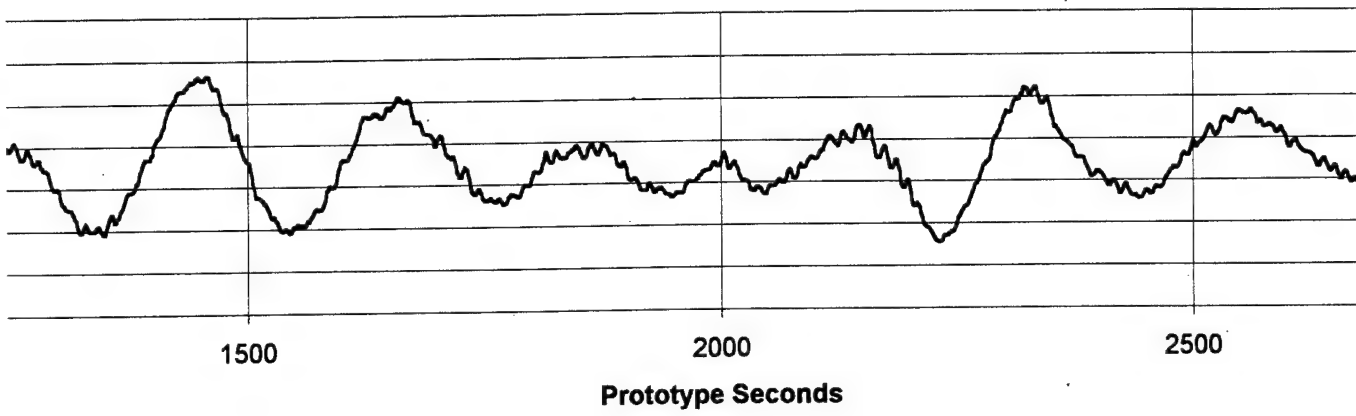


TEST A708 - PT SURGE

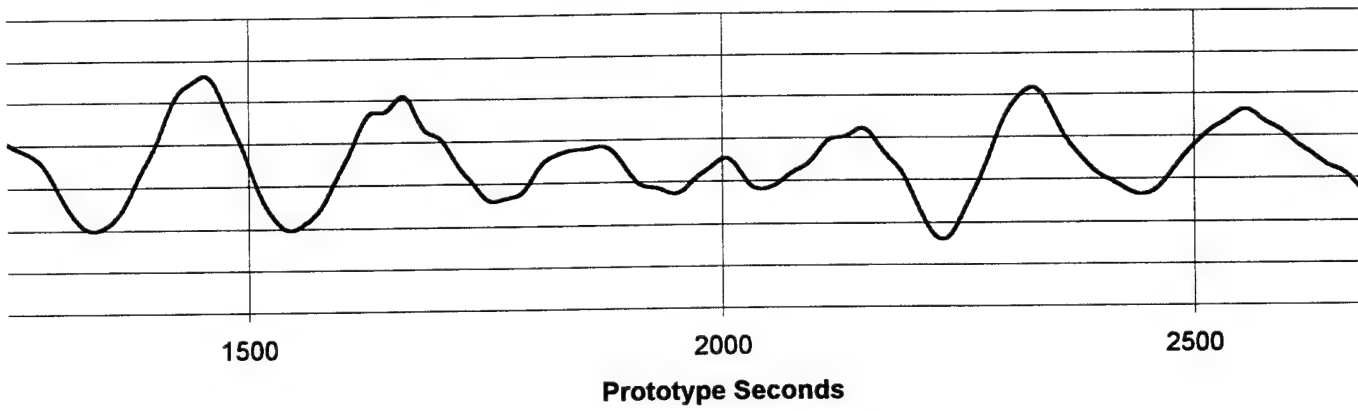


TEST A708 - PT SURGE

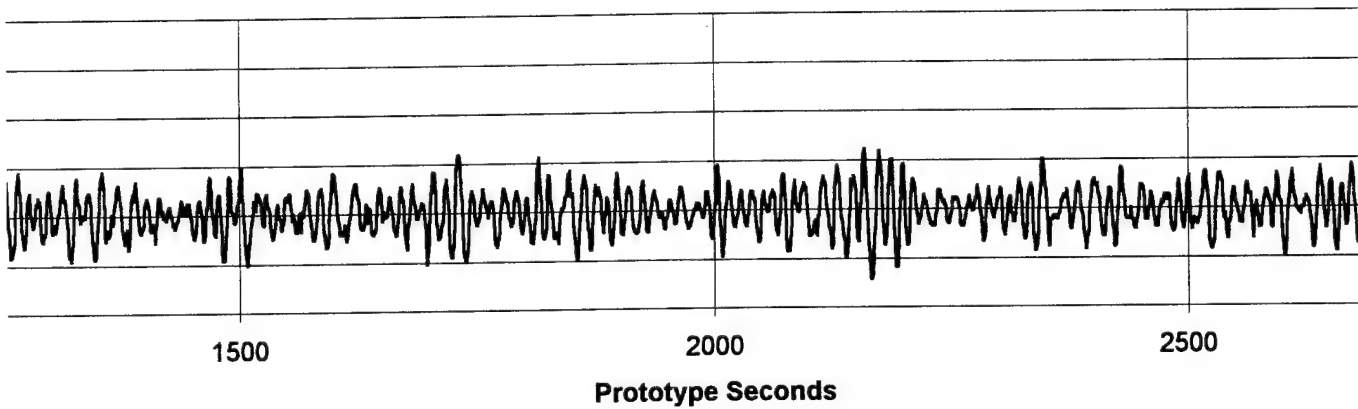
Unfiltered Time History



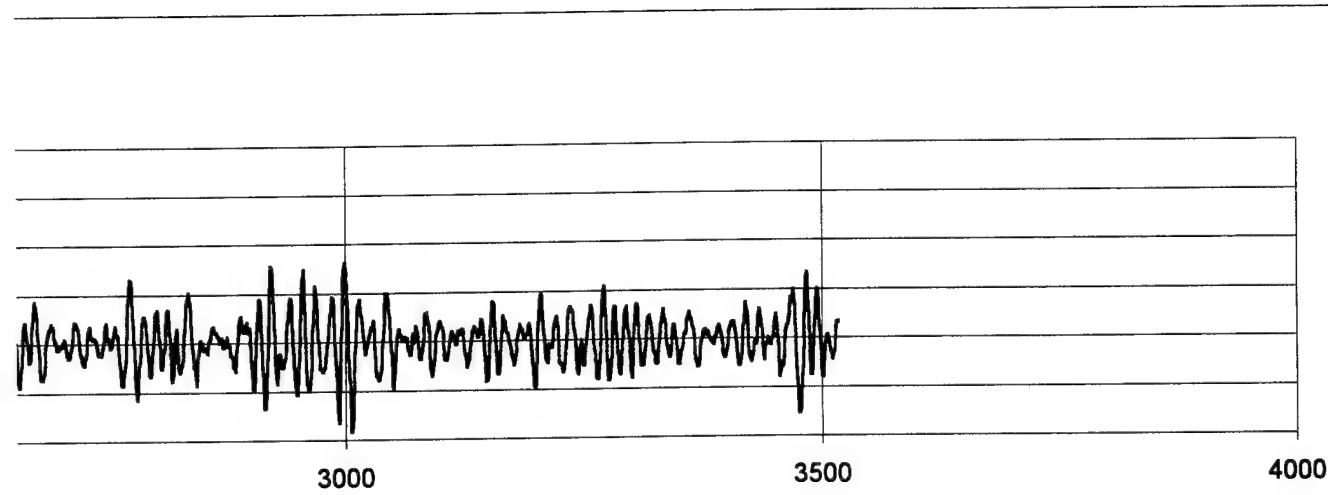
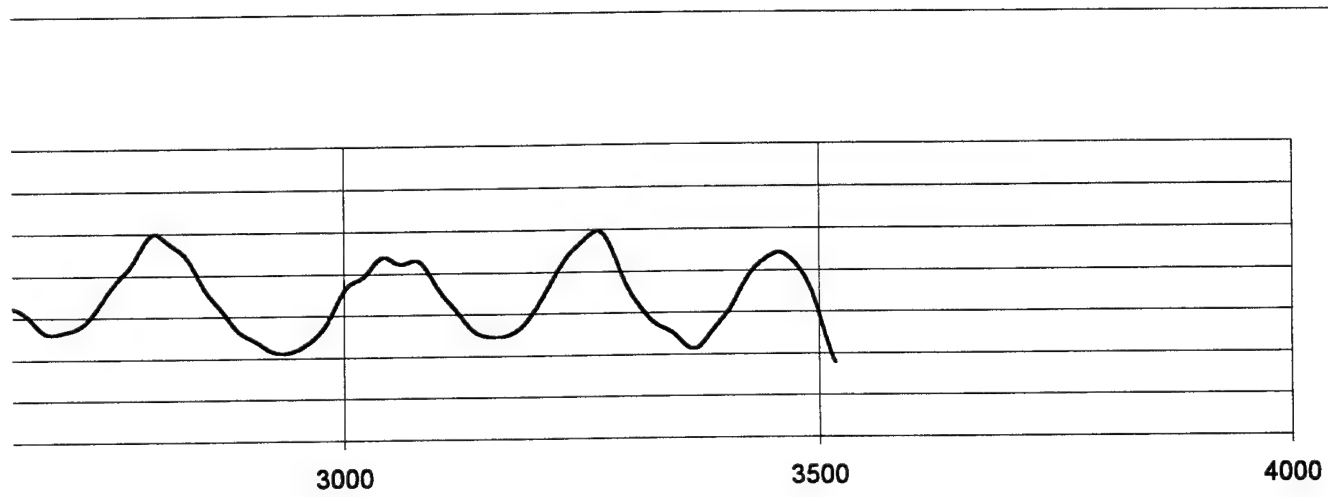
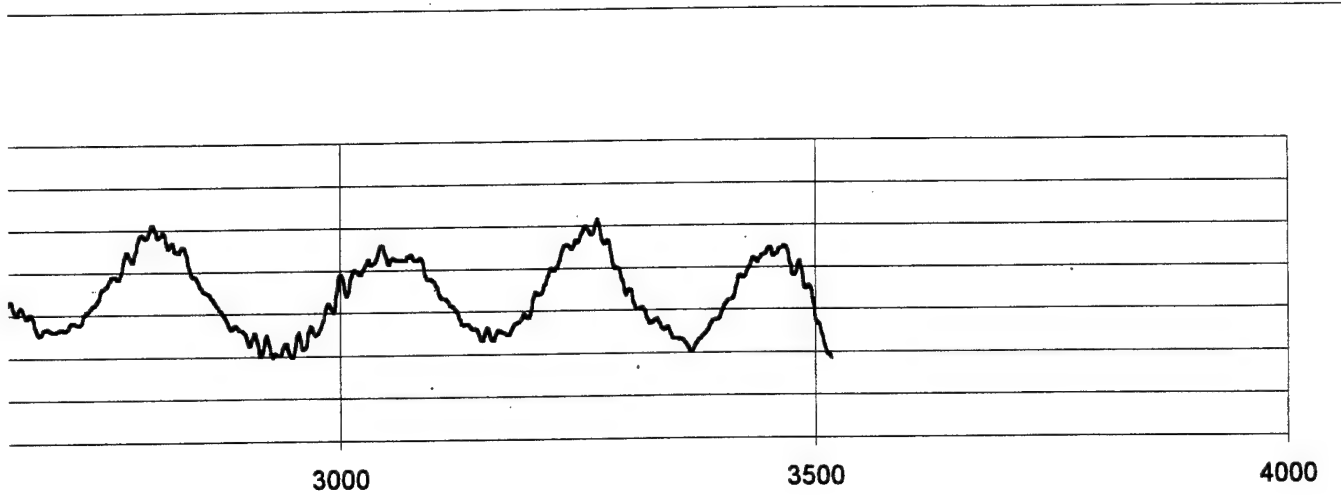
Filtered Low Frequency Time History



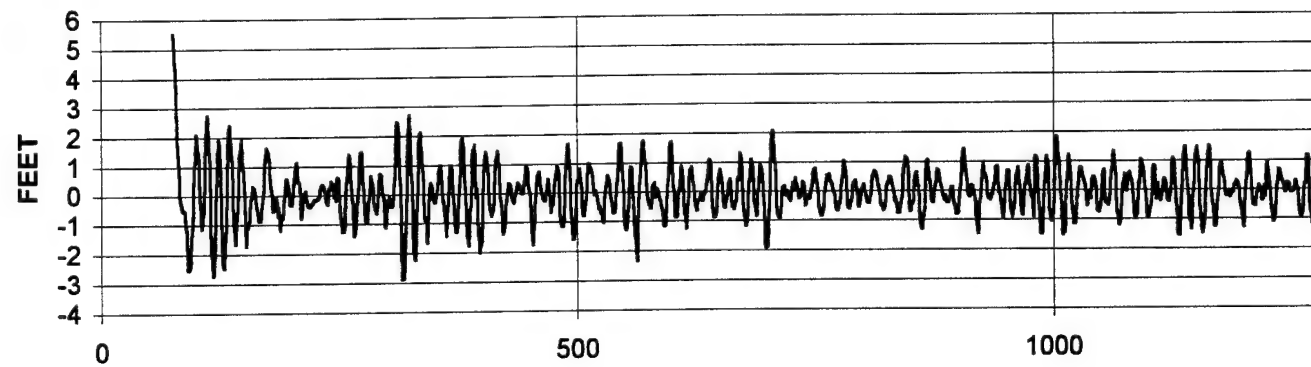
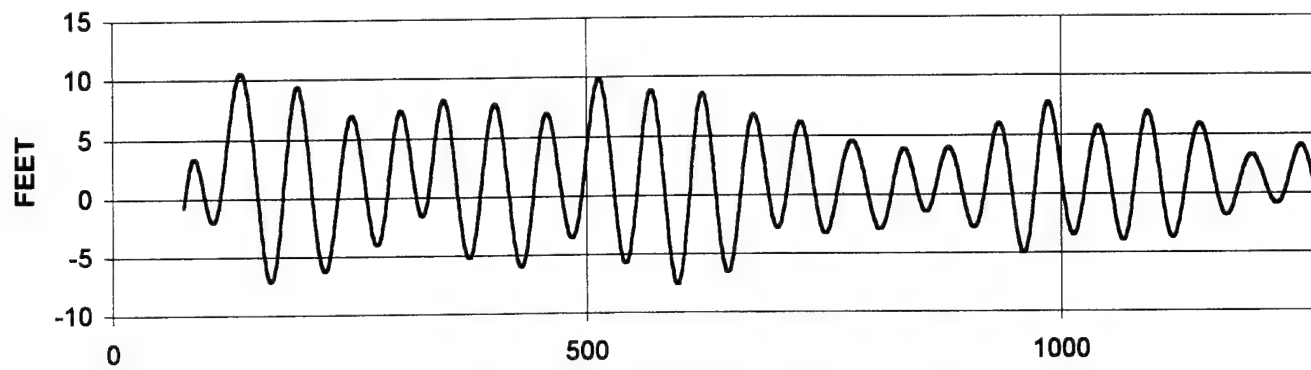
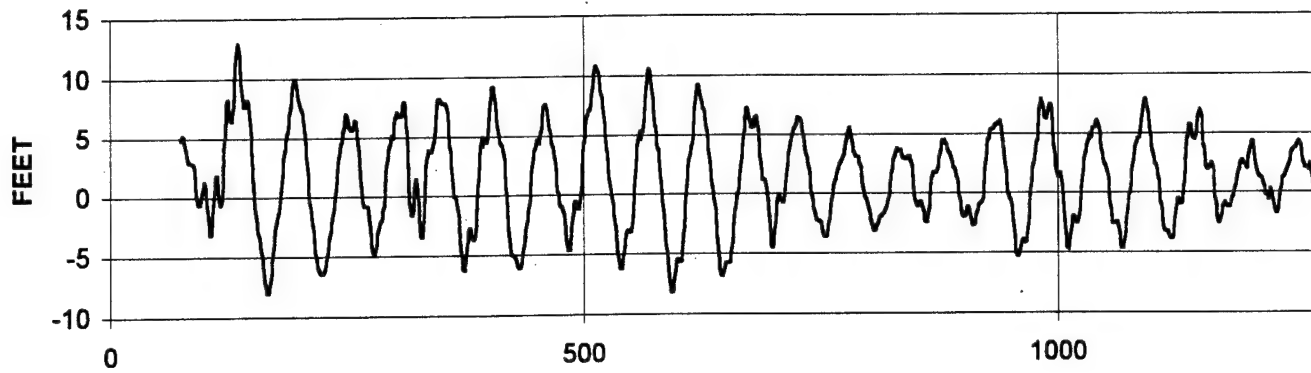
Filtered High Frequency Time History



TEST A708 - PT SURGE

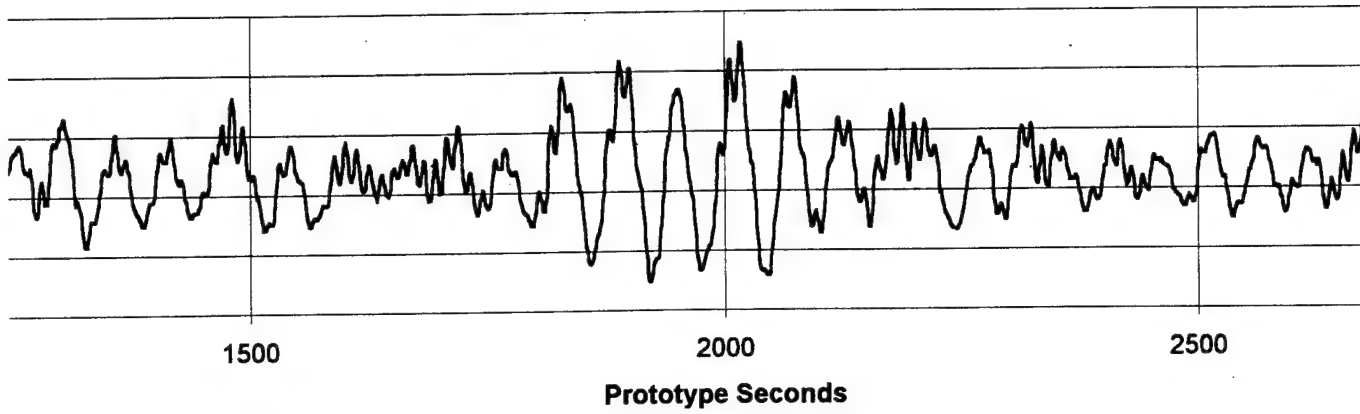


TEST A708 - PT HEAVE

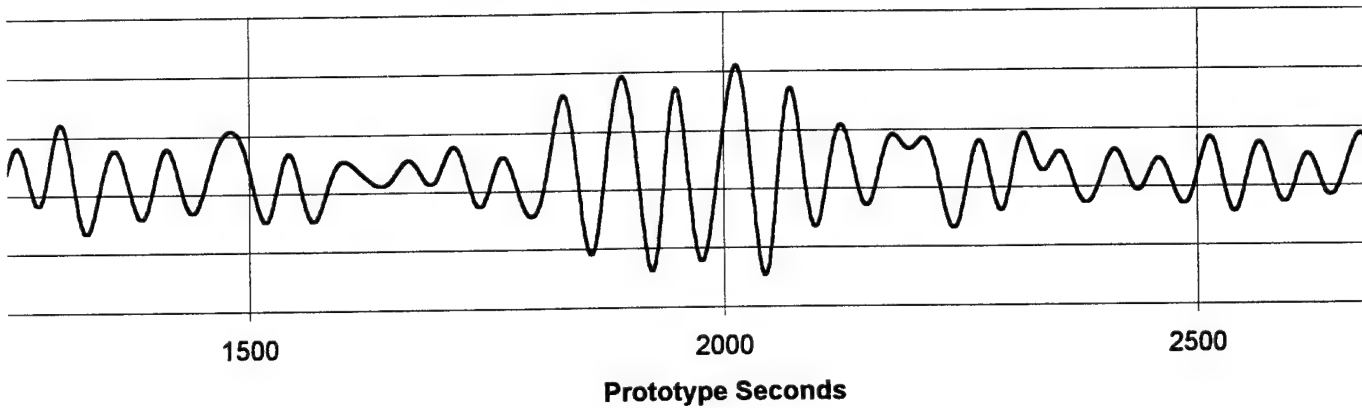


TEST A708 - PT HEAVE

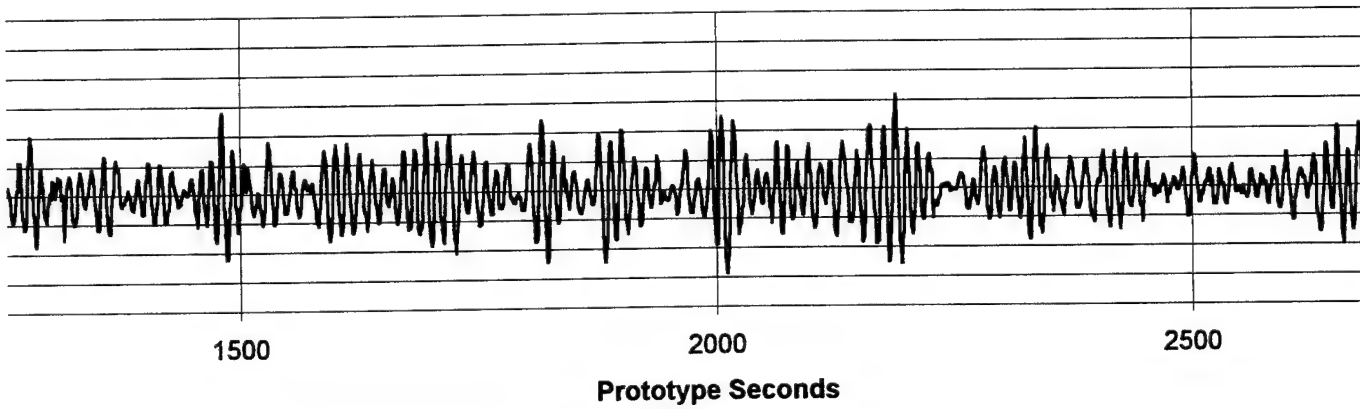
Unfiltered Time History



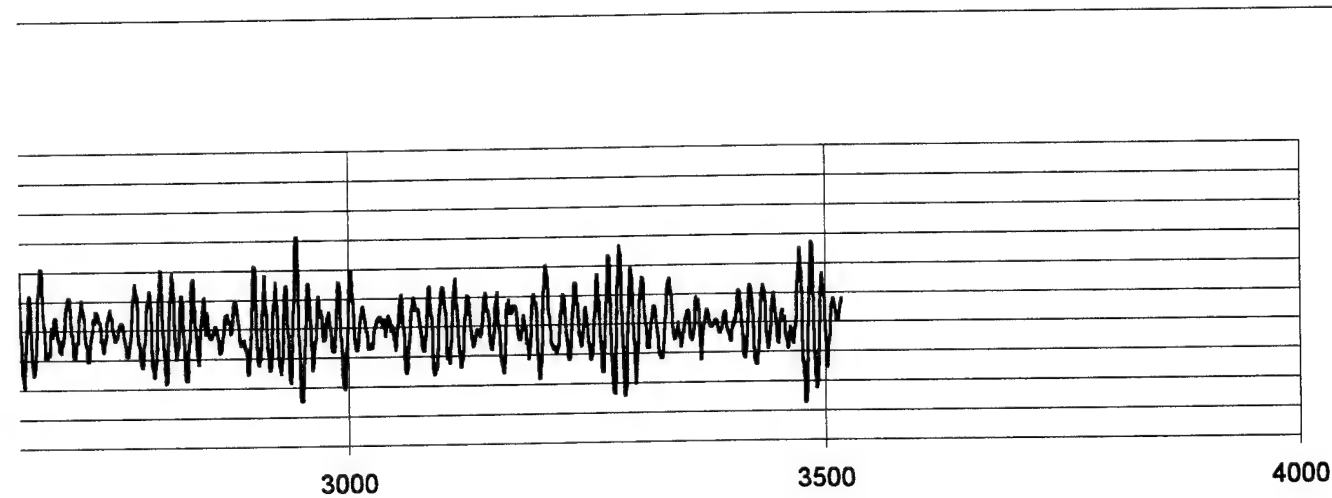
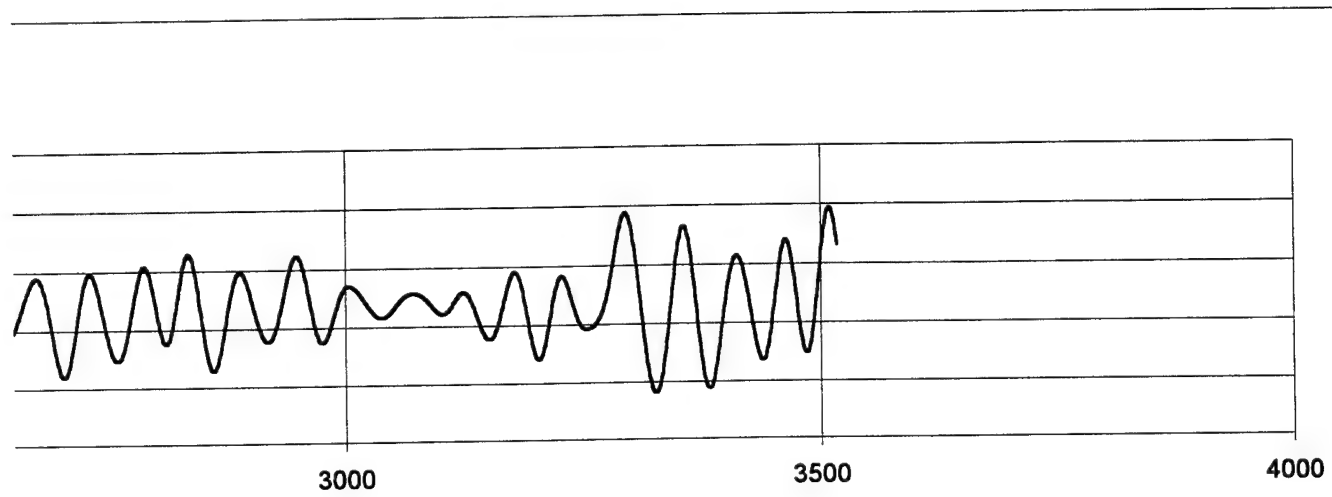
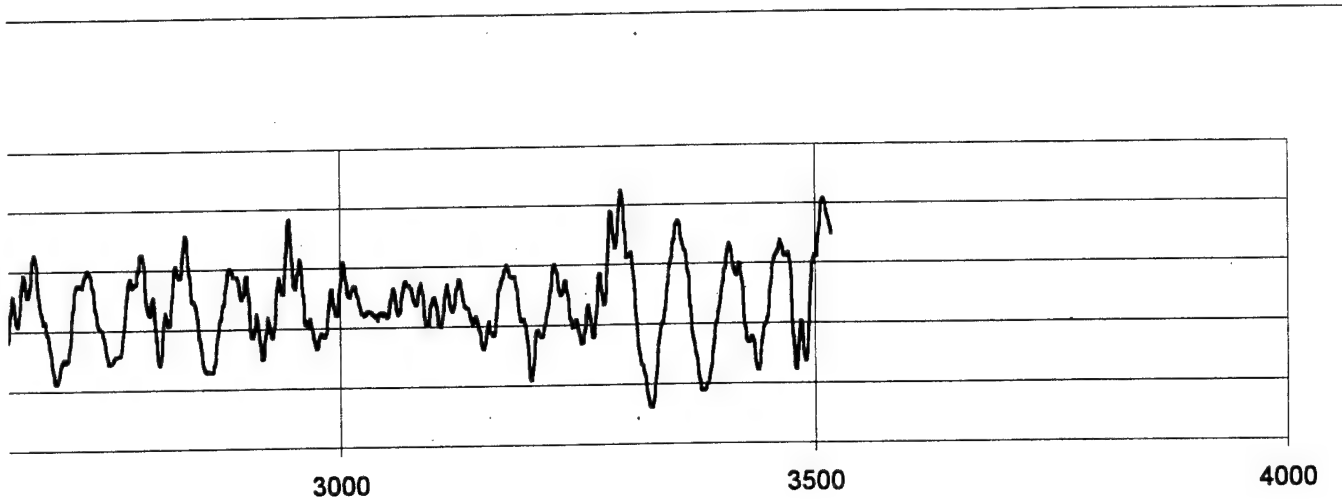
Filtered Low Frequency Time History



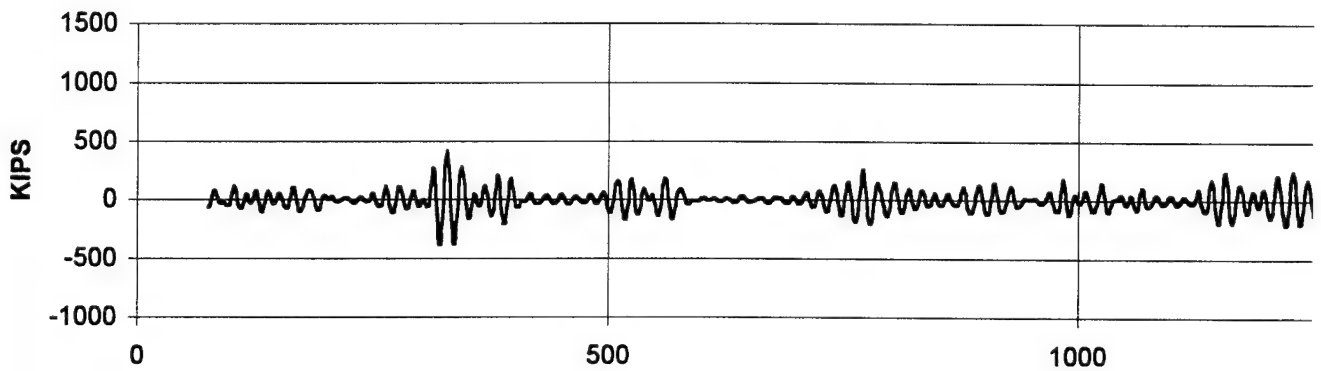
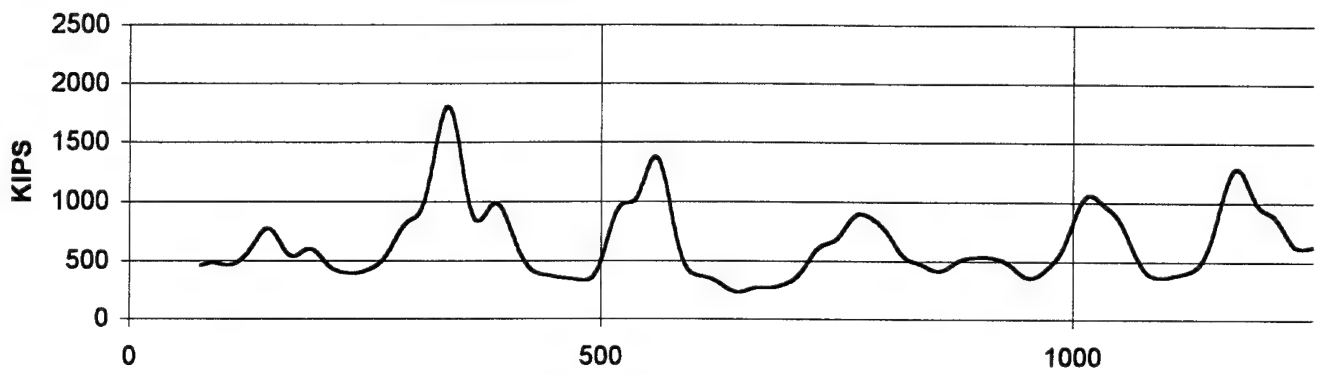
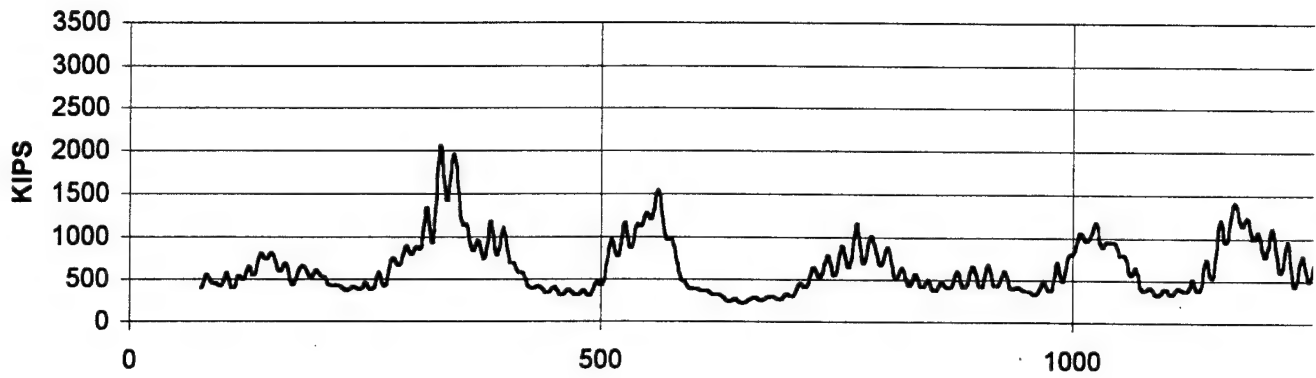
Filtered High Frequency Time History



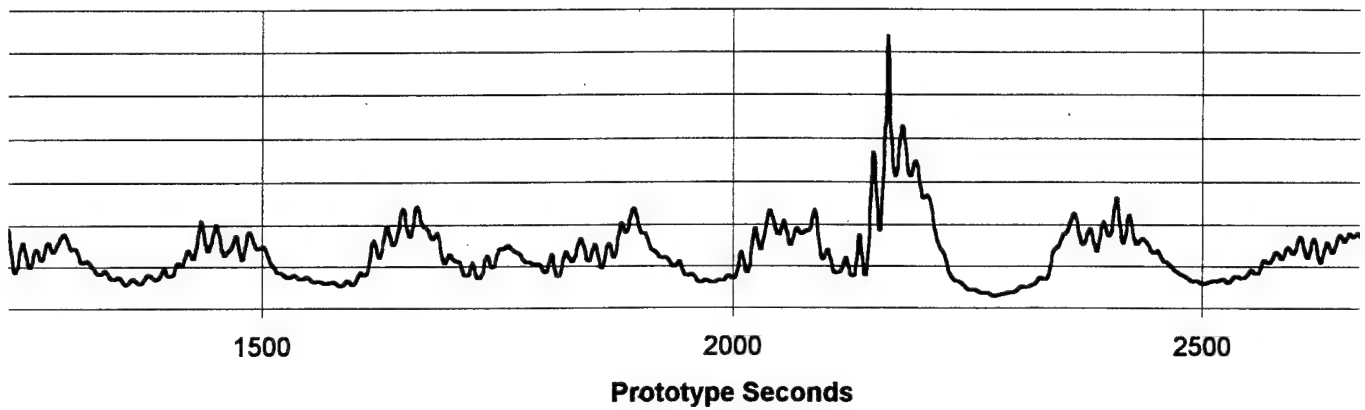
TEST A708 - PT HEAVE



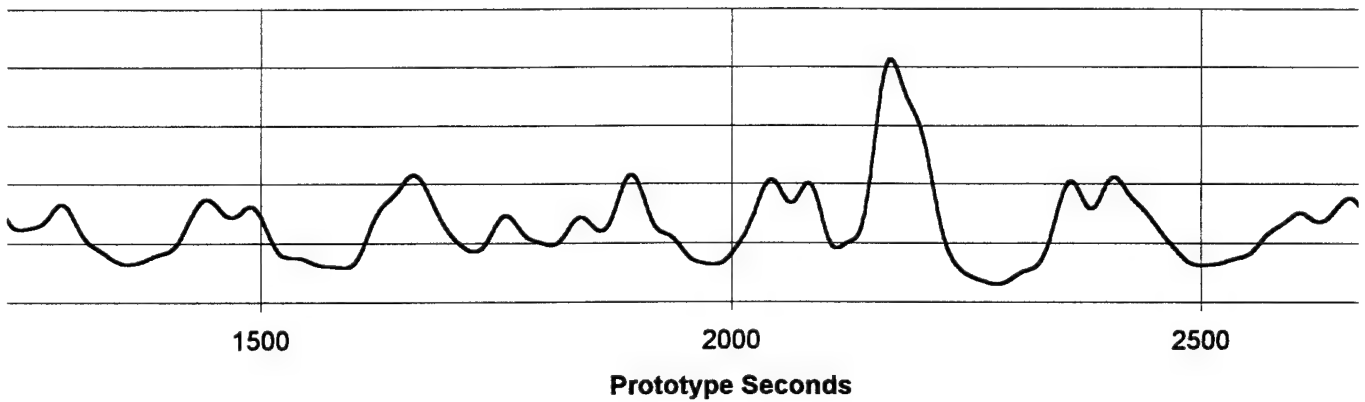
TEST A709 - ML_1 TENSION



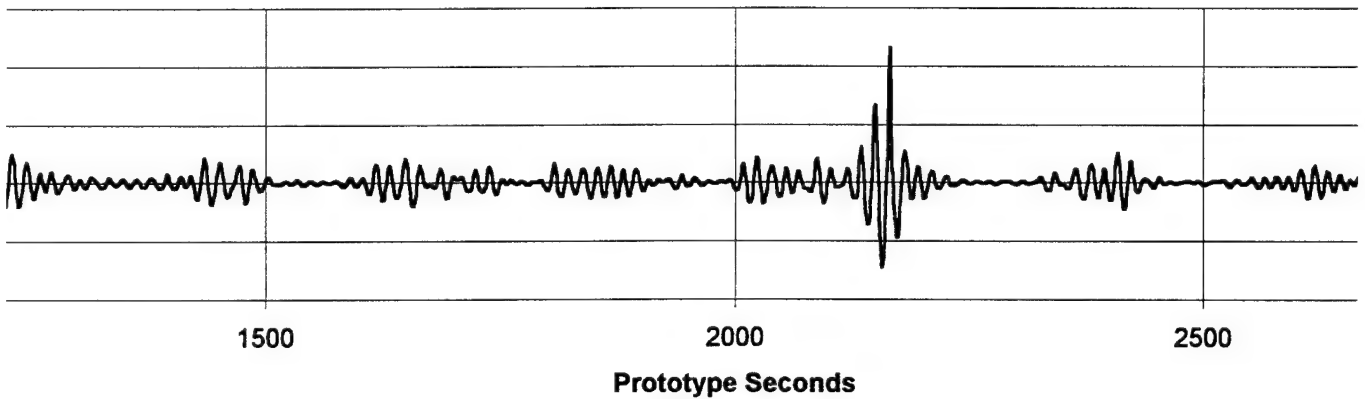
Unfiltered Time History



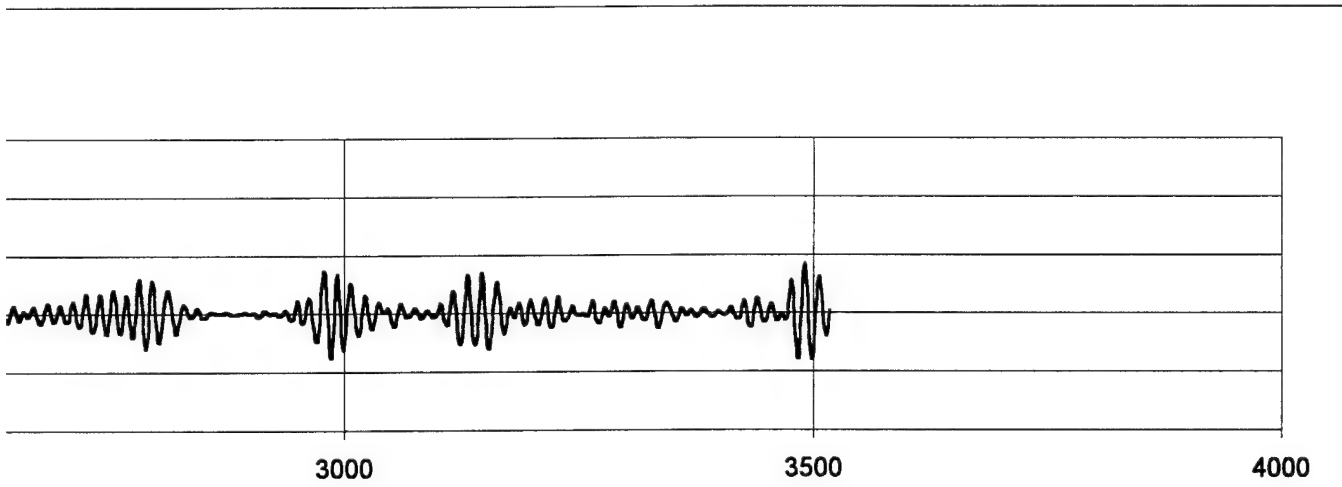
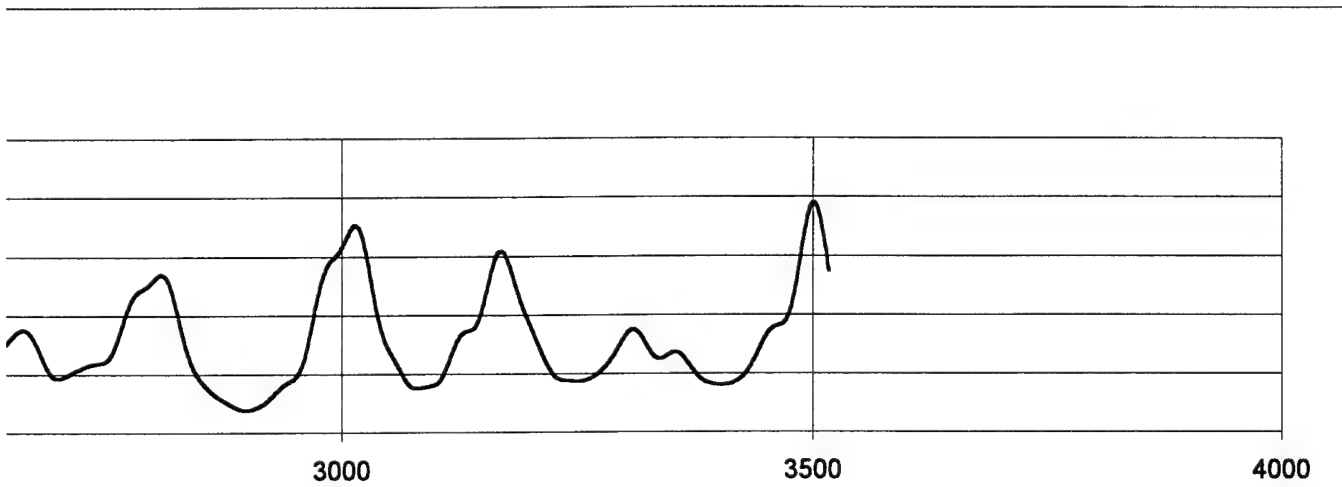
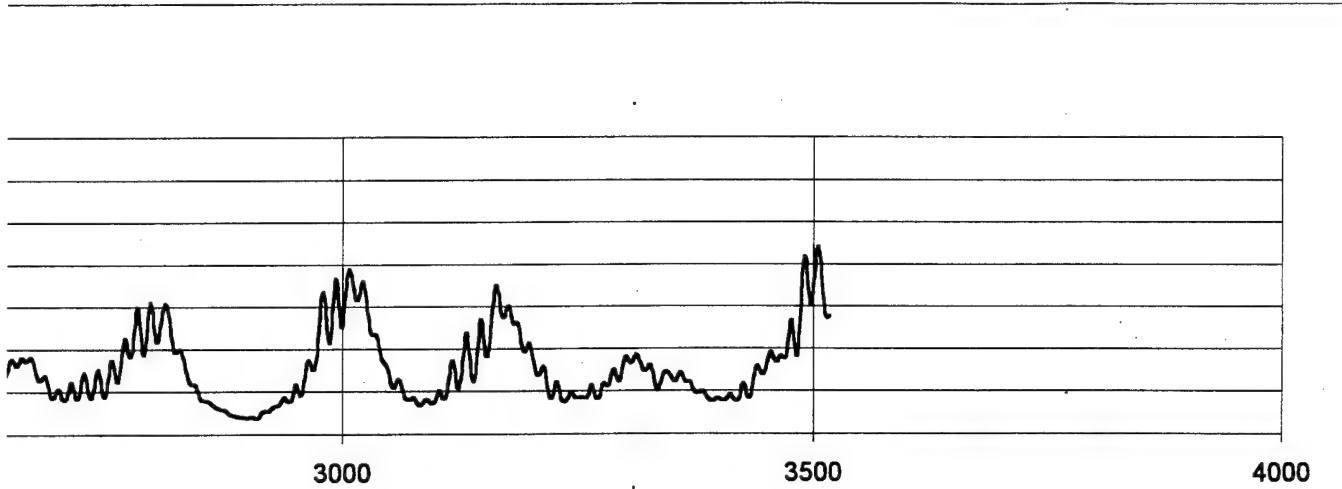
Filtered Low Frequency Time History



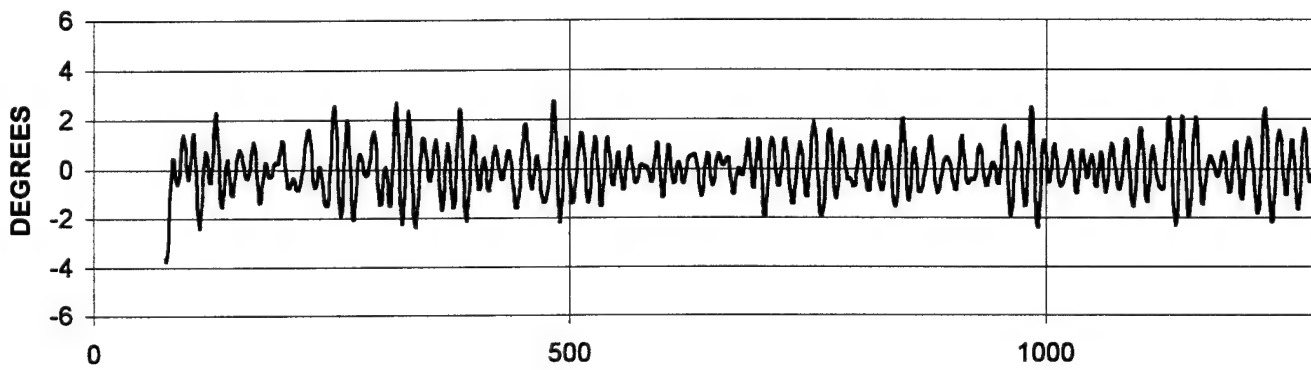
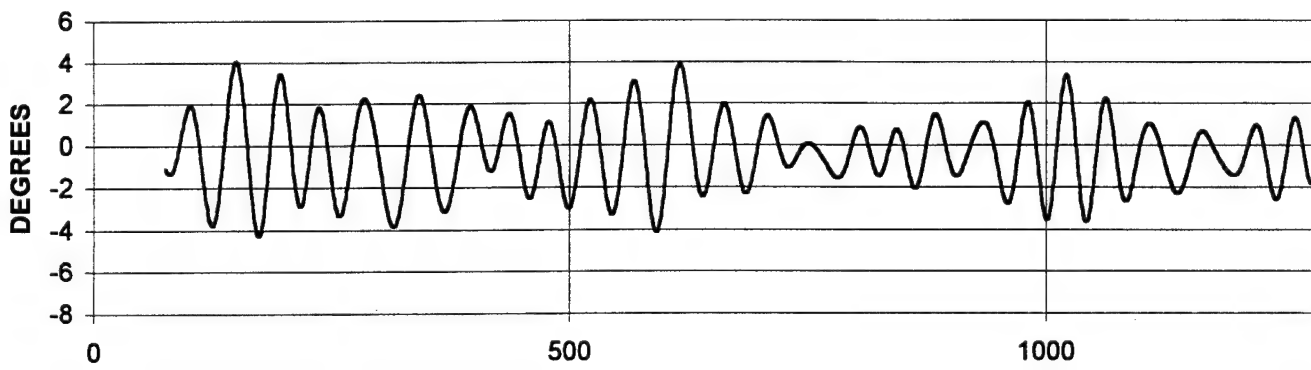
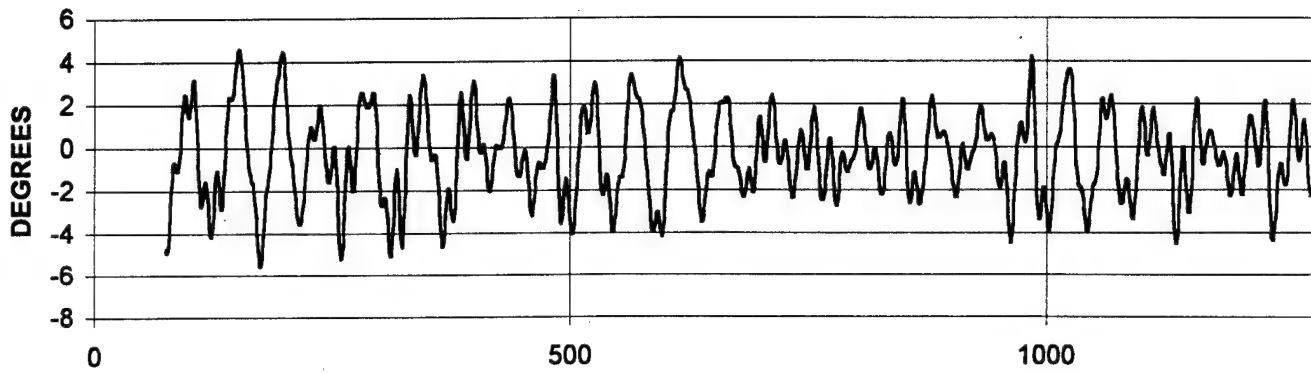
Filtered High Frequency Time History



TEST A709 - ML_1 TENSION

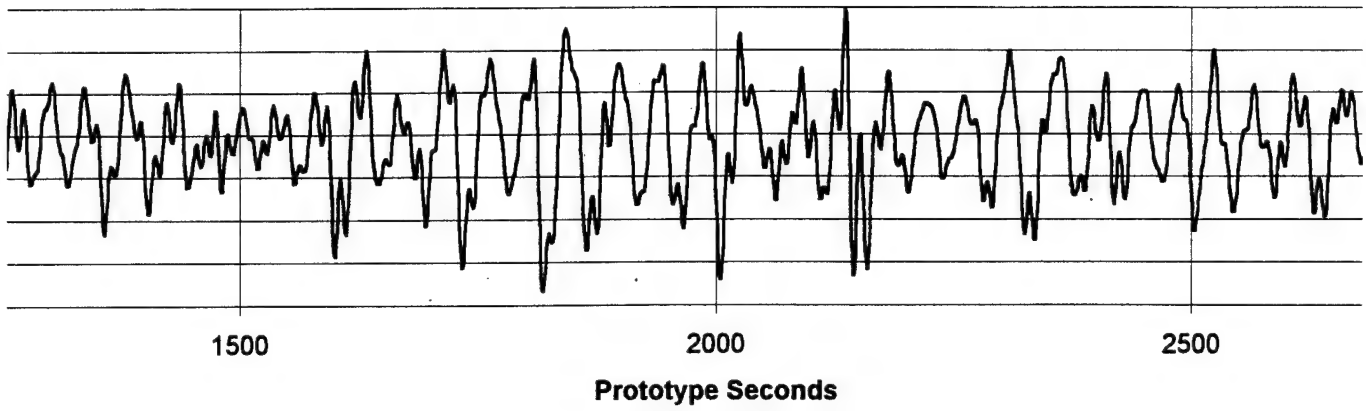


TEST A709 - PITCH

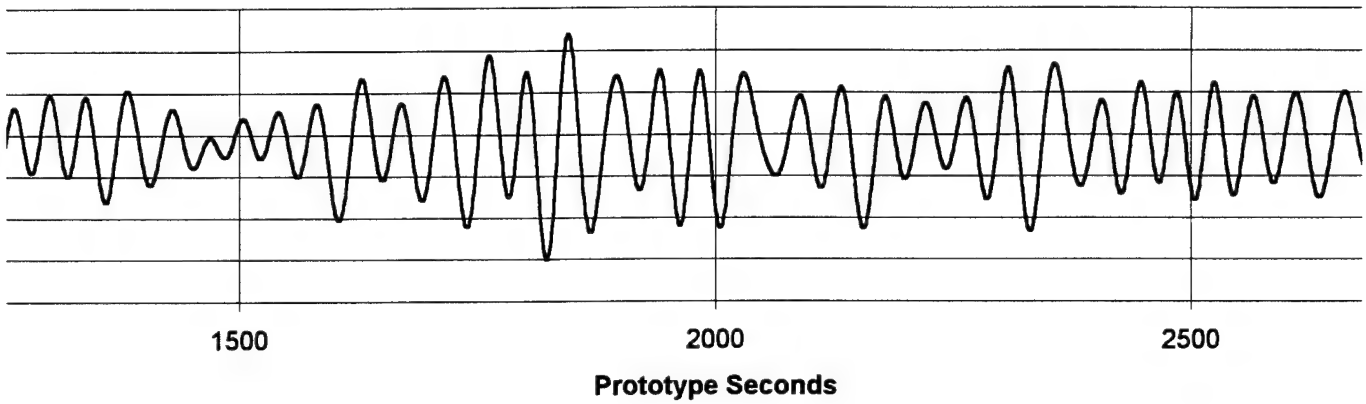


TEST A709 - PITCH

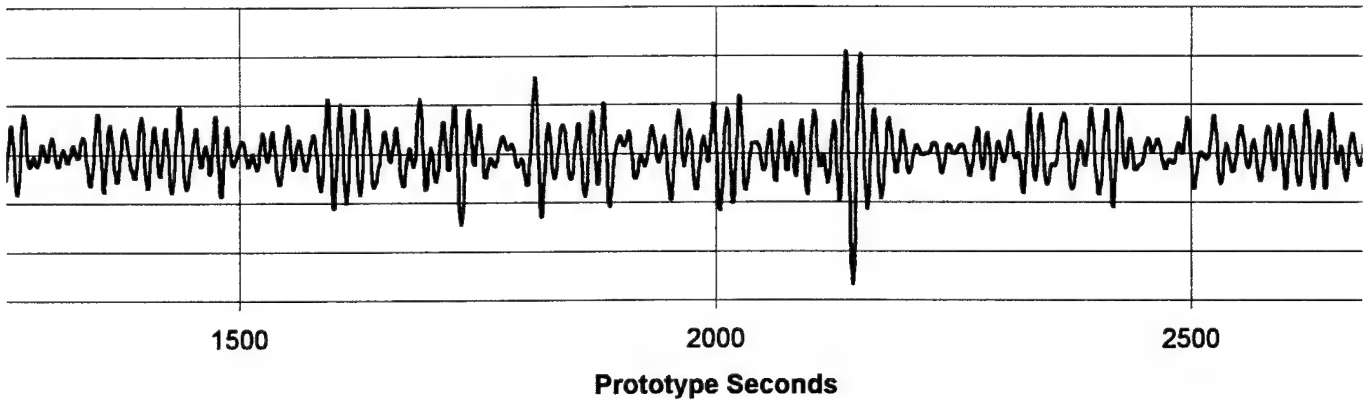
Unfiltered Time History



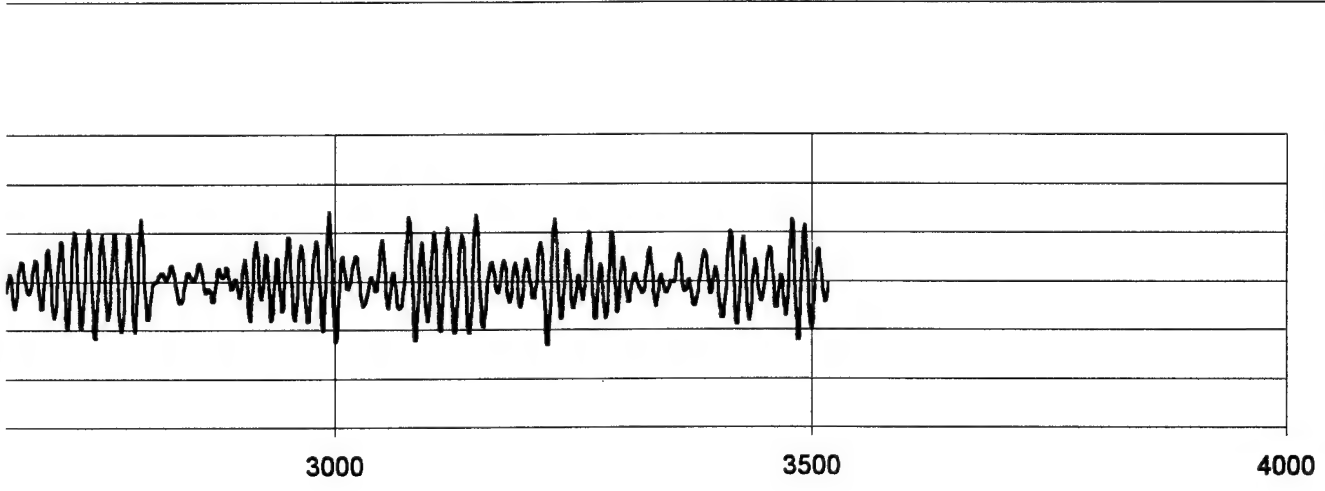
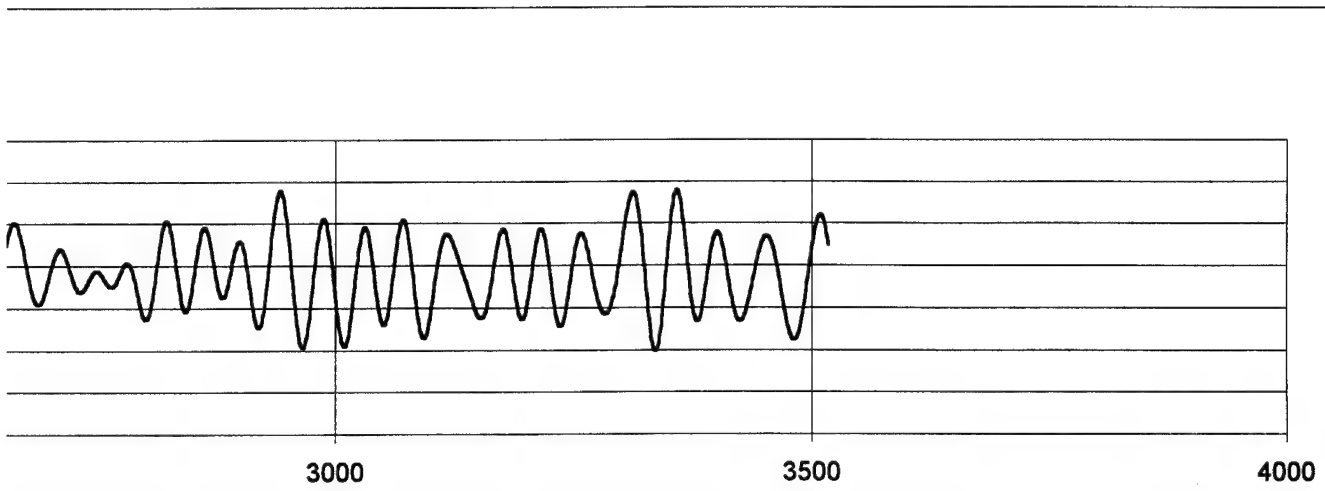
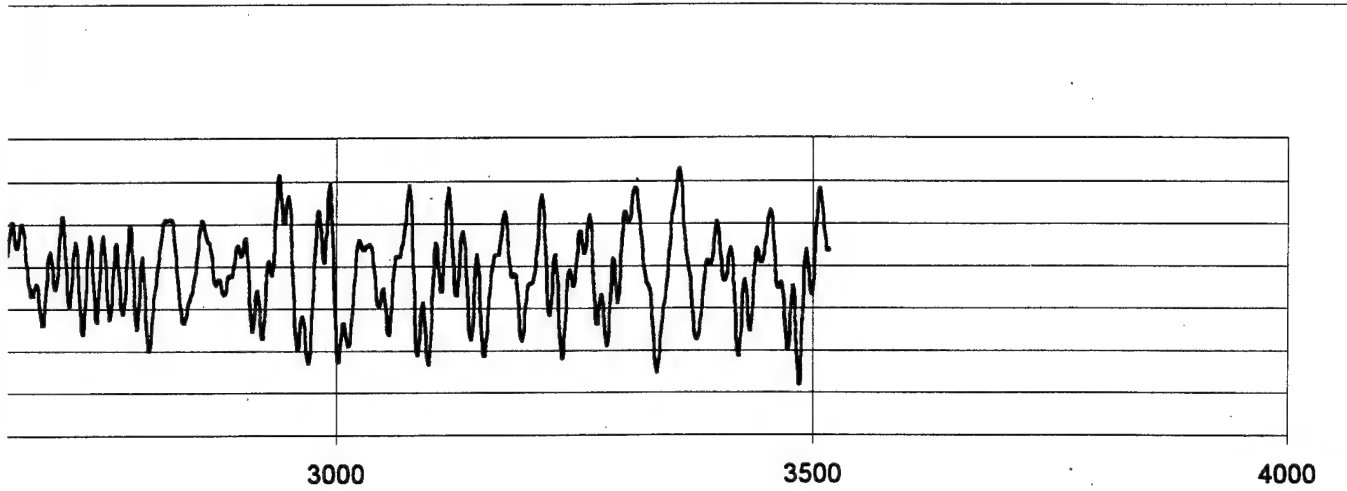
Filtered Low Frequency Time History



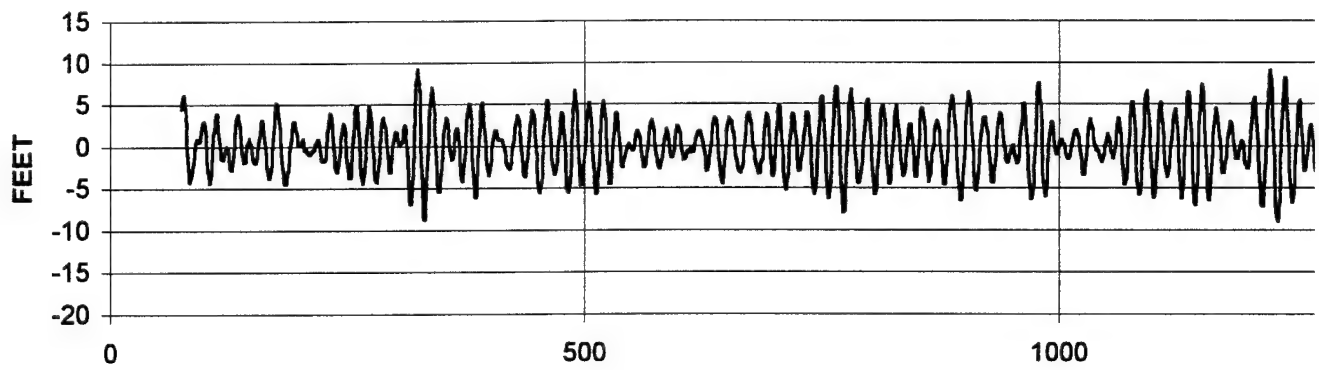
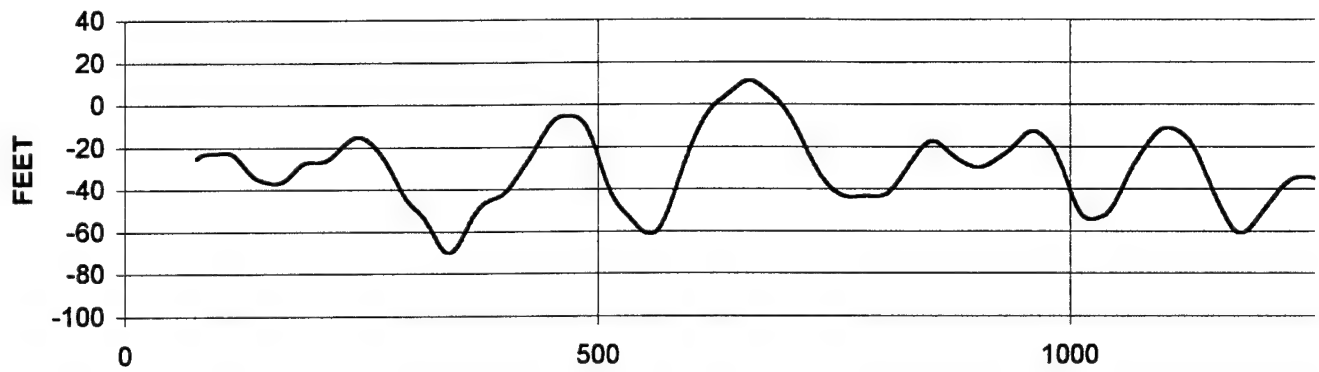
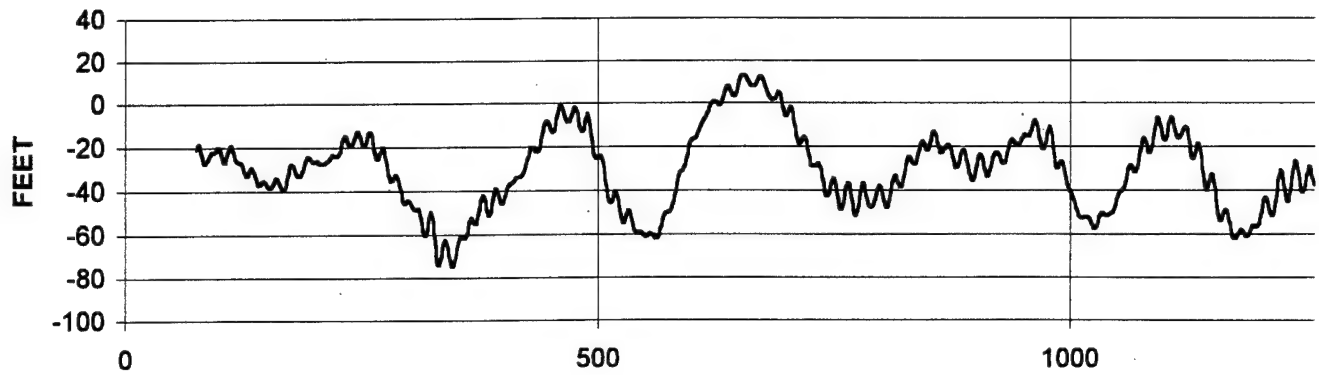
Filtered High Frequency Time History



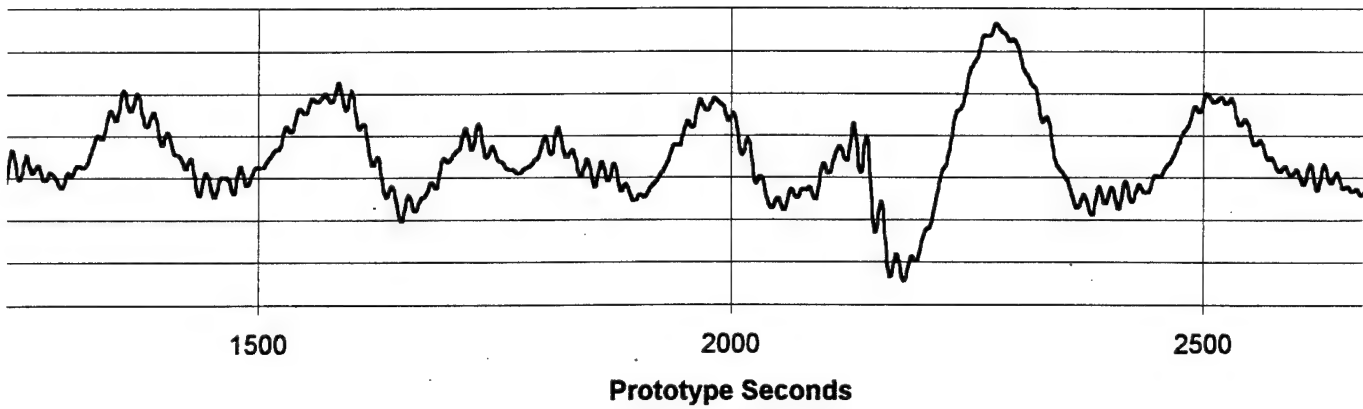
TEST A709 - PITCH



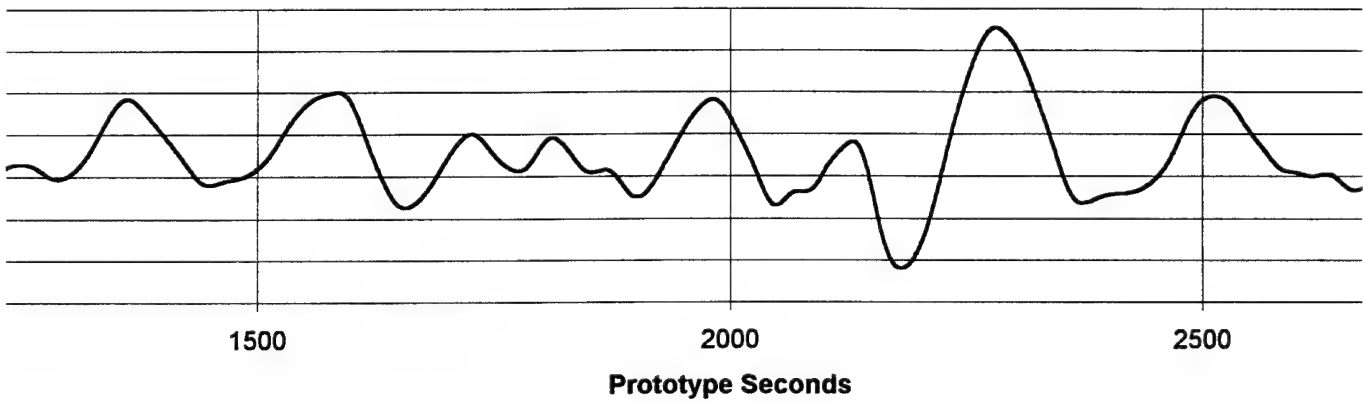
TEST A709 - PT SURGE



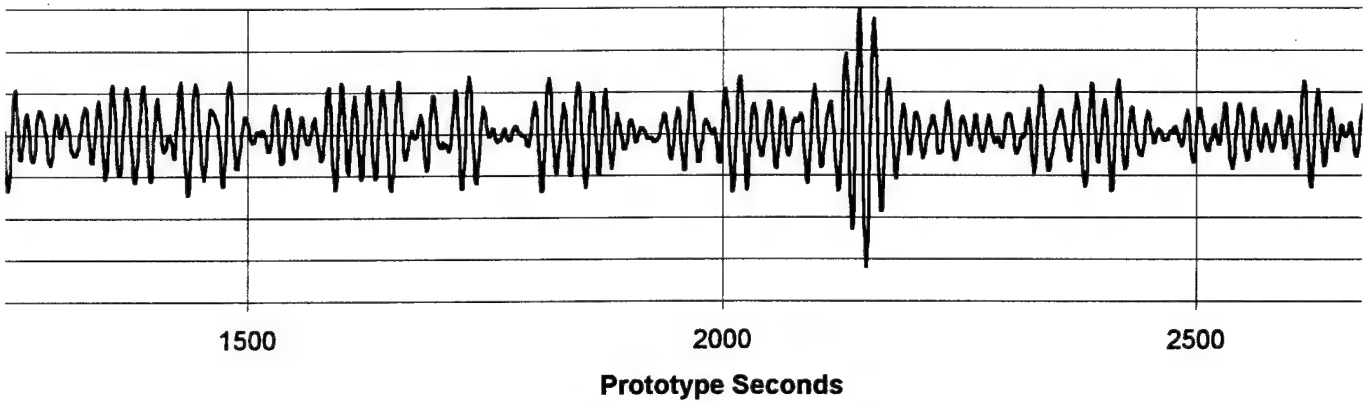
Unfiltered Time History



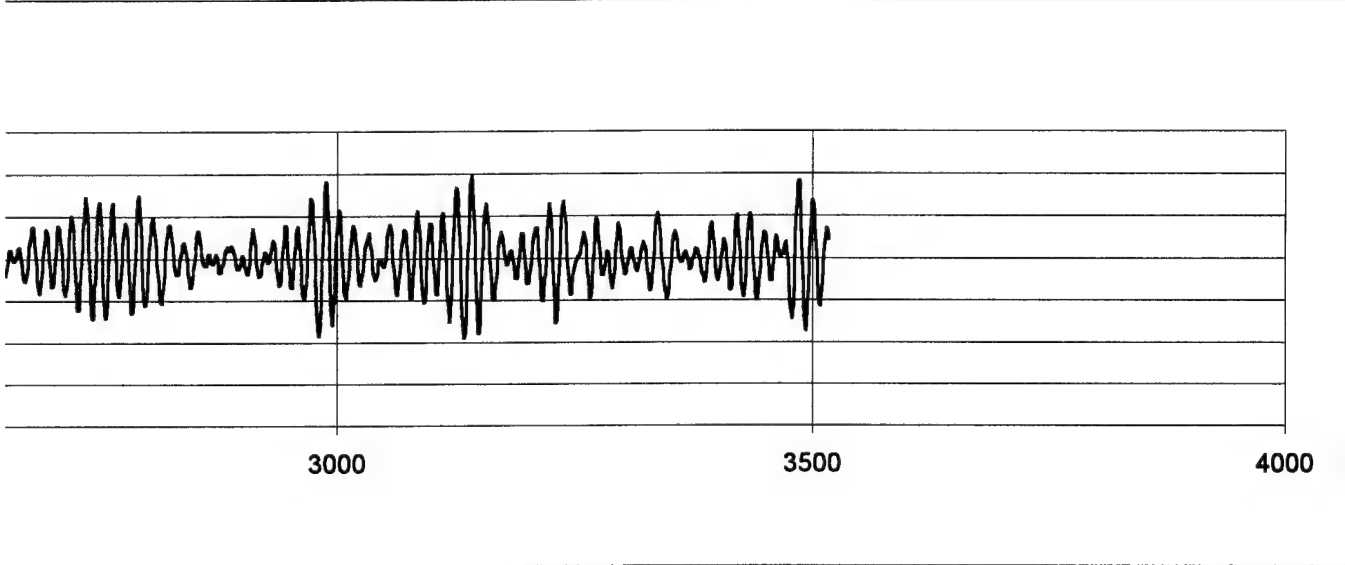
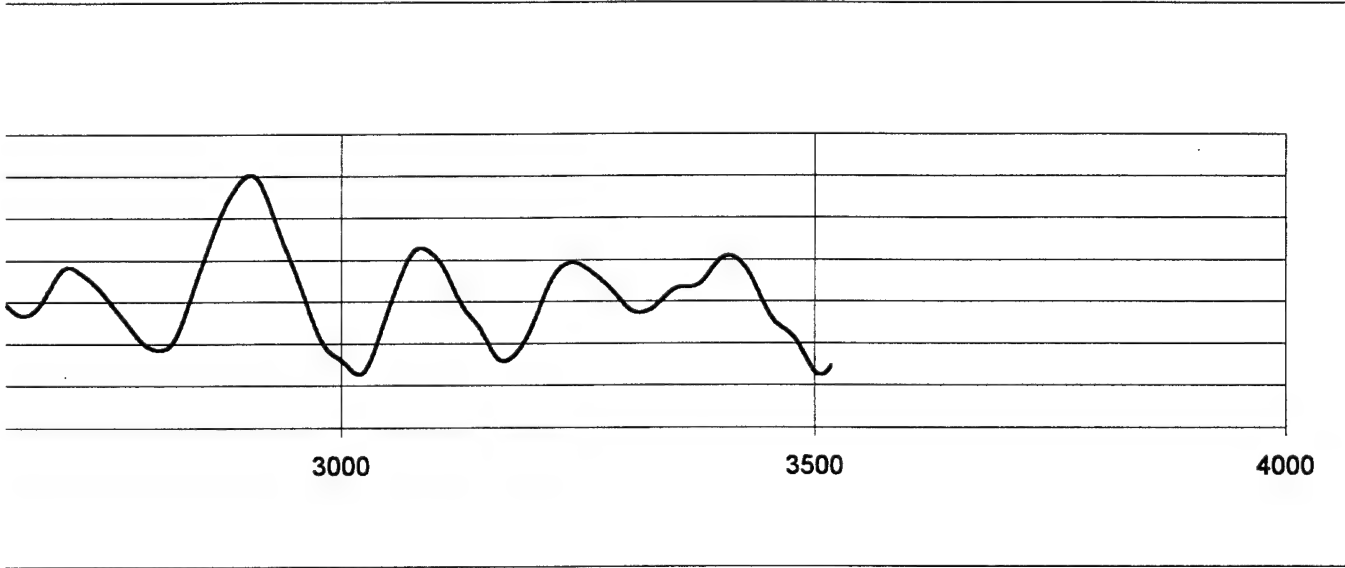
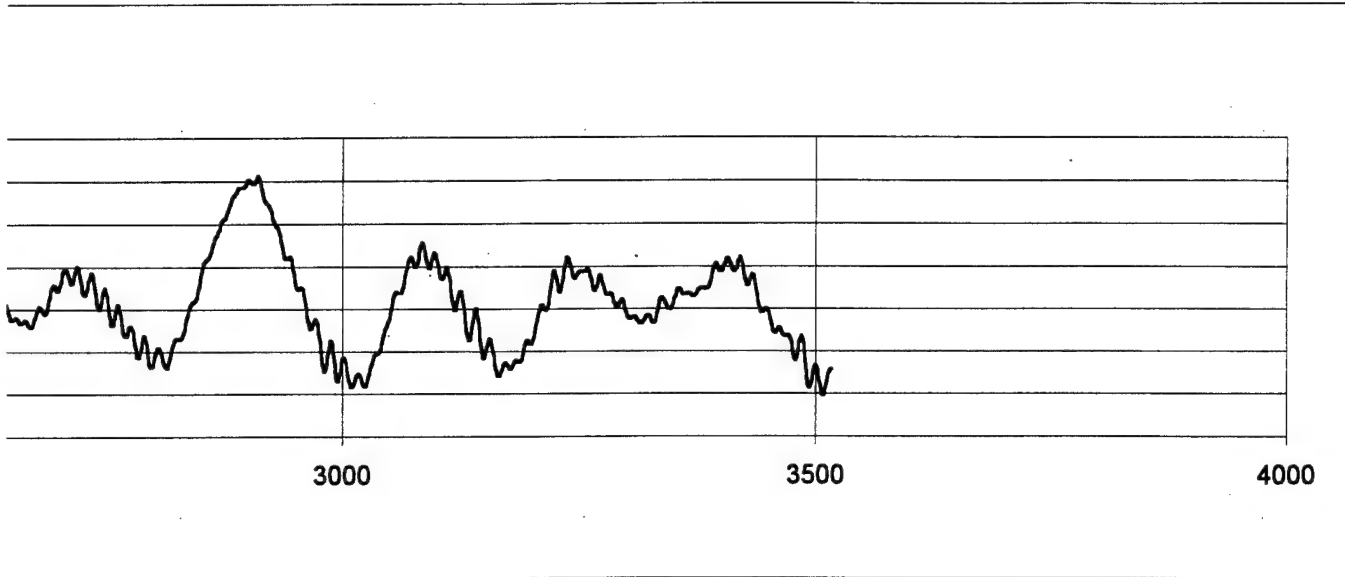
Filtered Low Frequency Time History



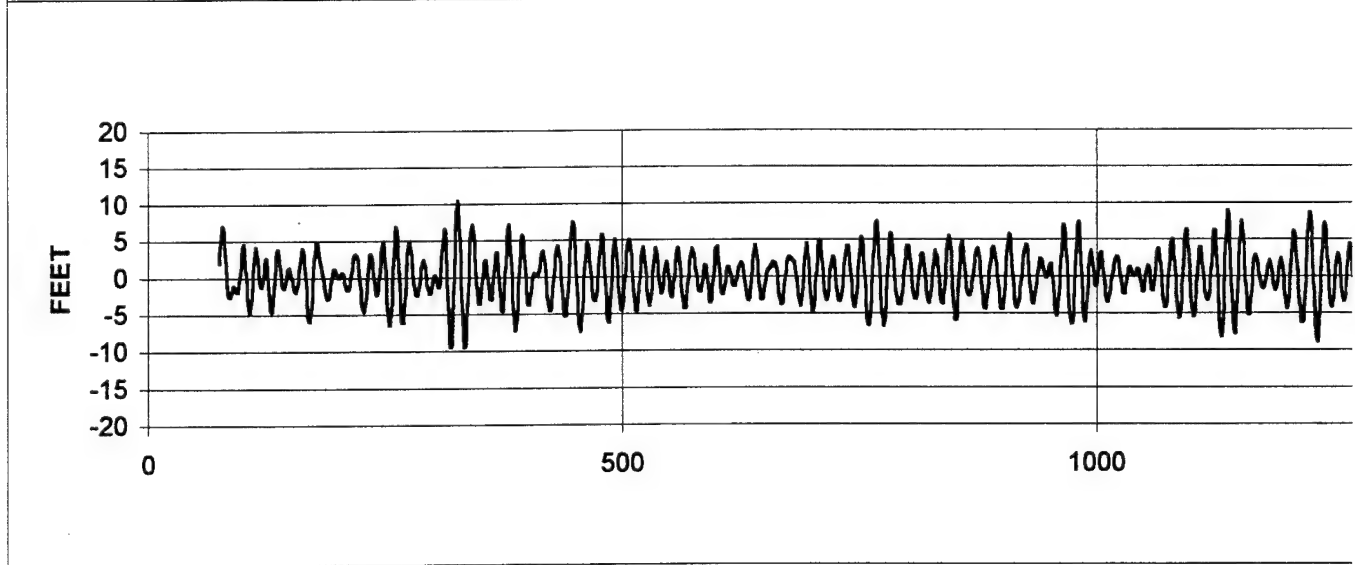
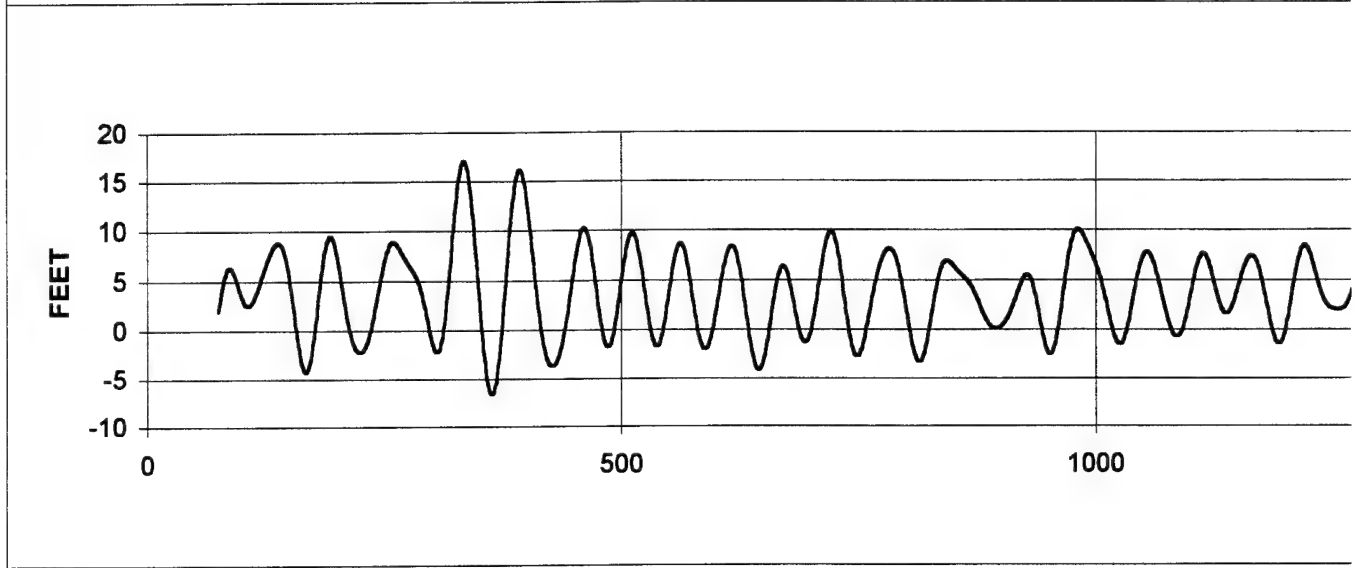
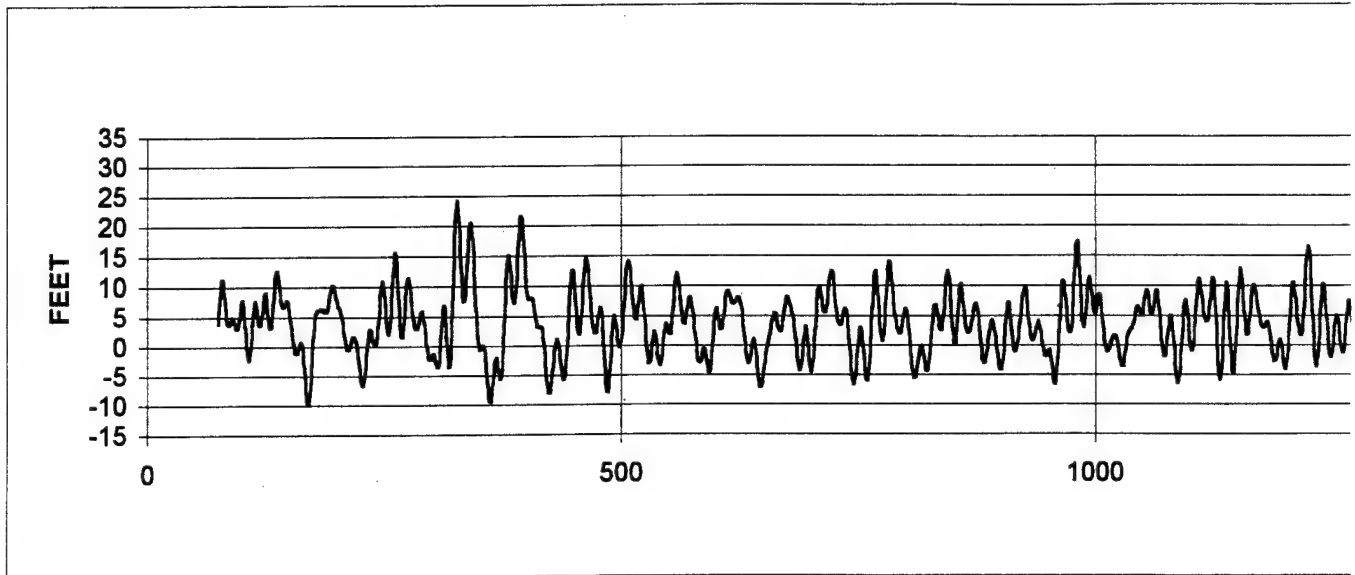
Filtered High Frequency Time History



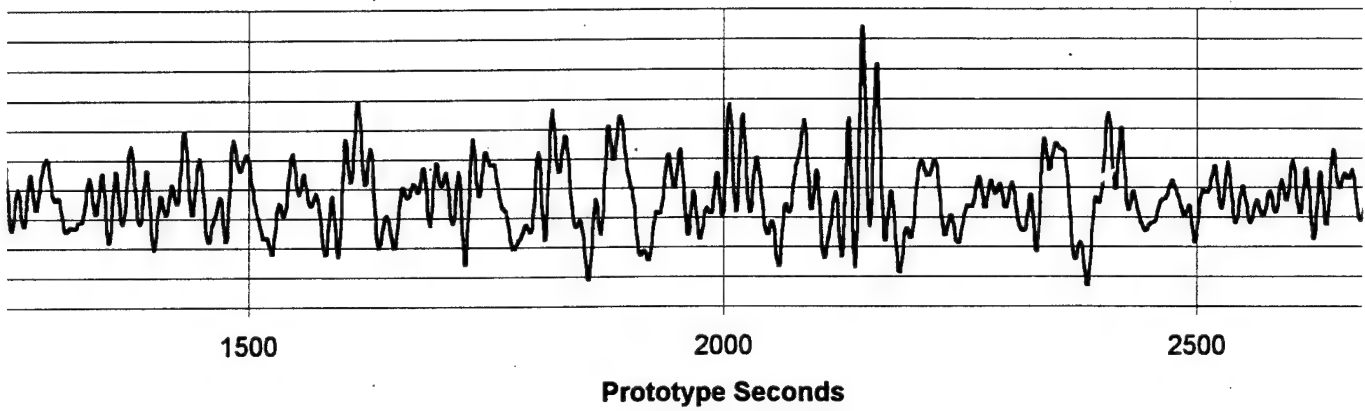
TEST A709 - PT SURGE



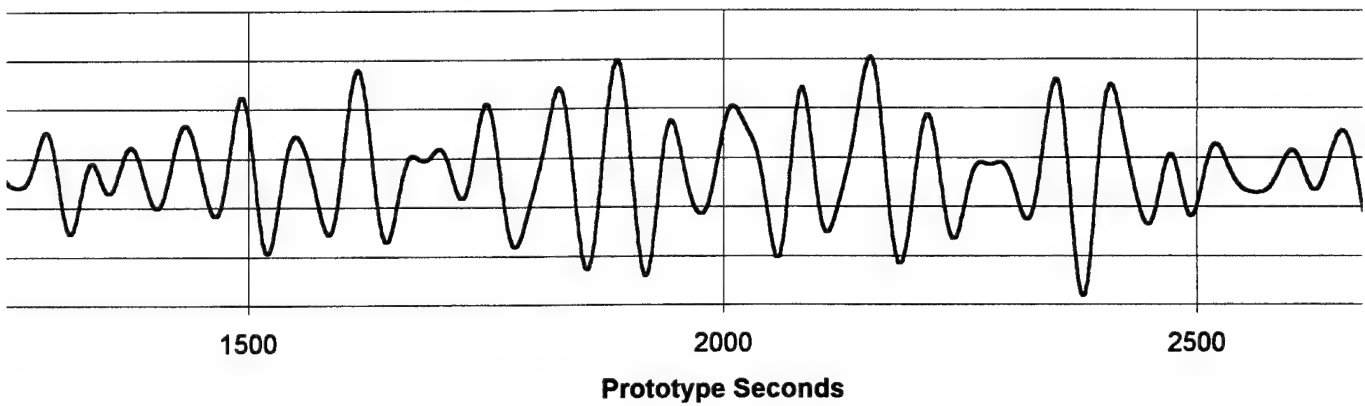
TEST A709 - PT HEAVE



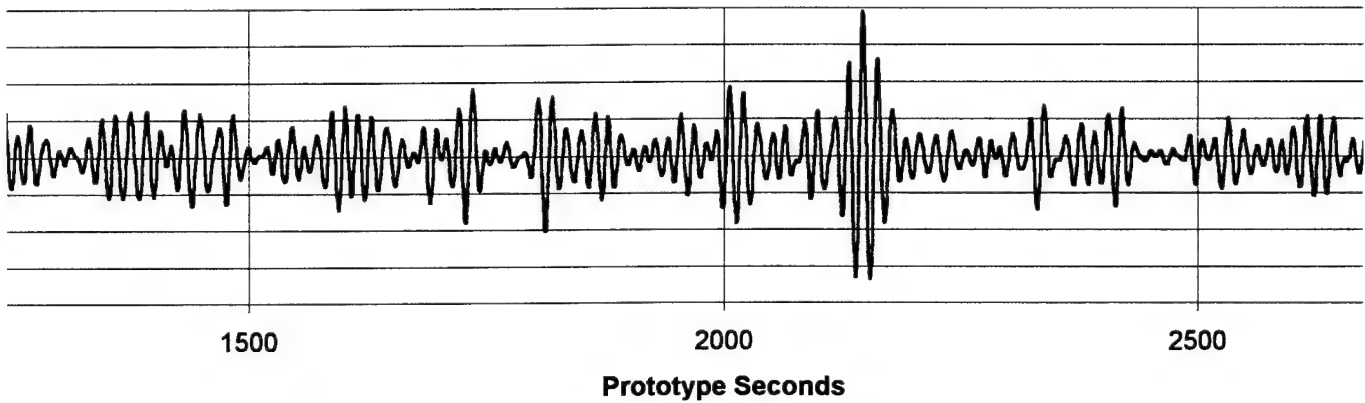
Unfiltered Time History



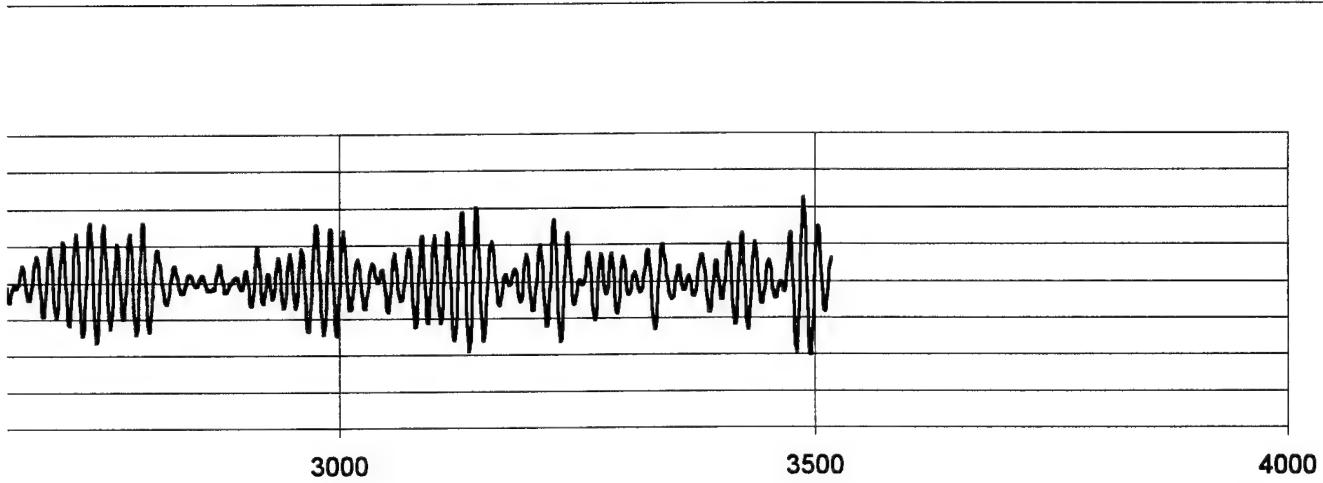
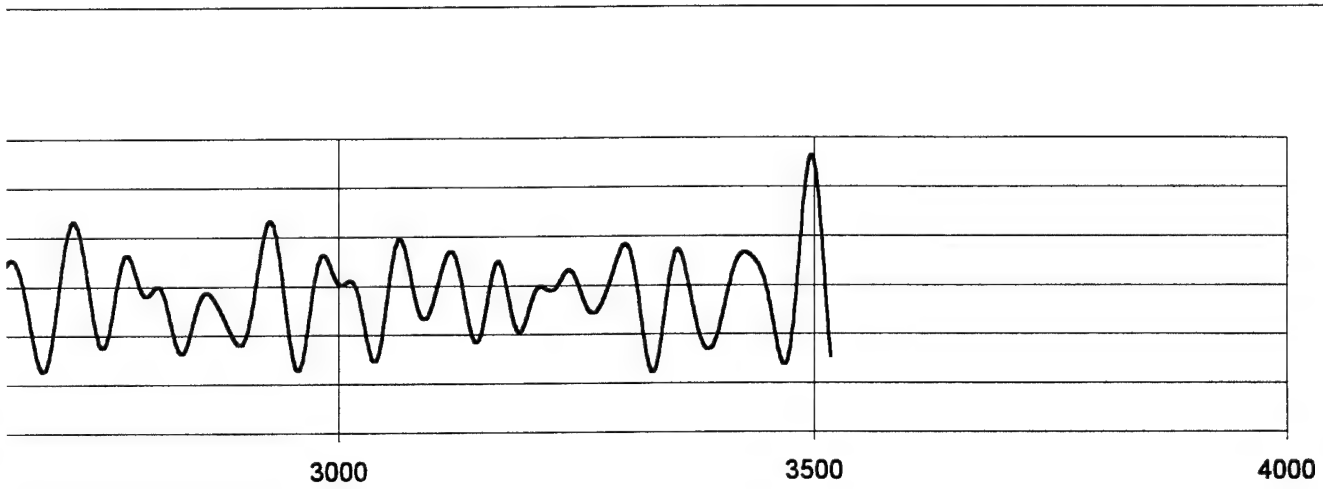
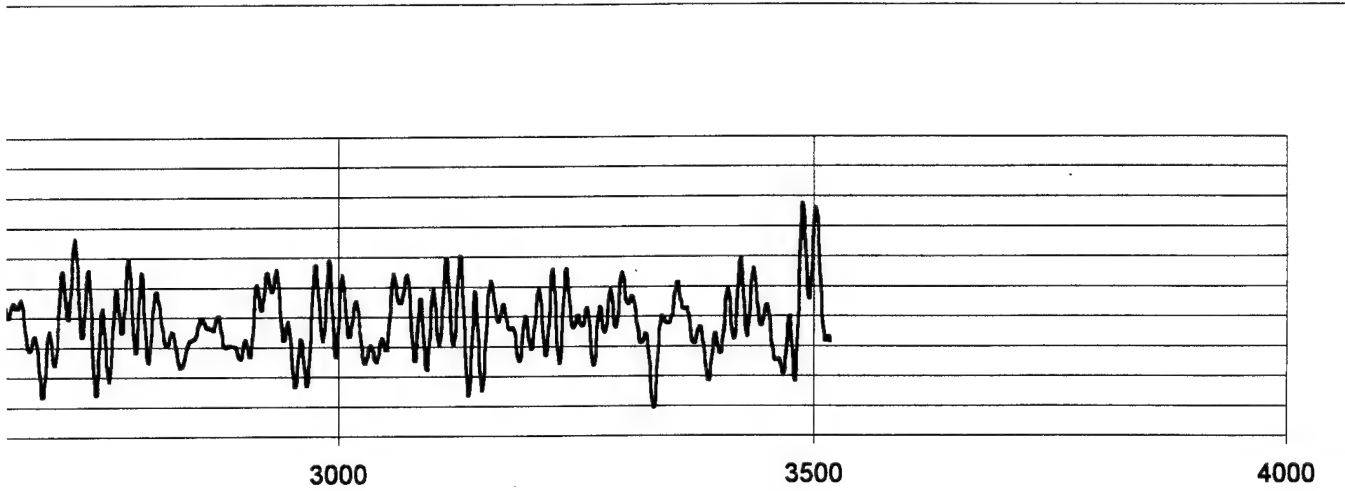
Filtered Low Frequency Time History



Filtered High Frequency Time History

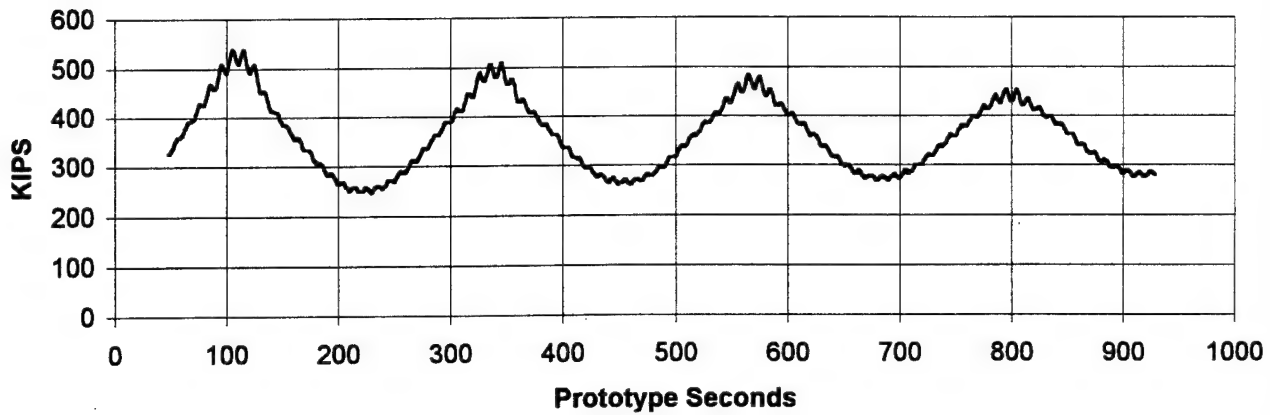


TEST A709 - PT HEAVE

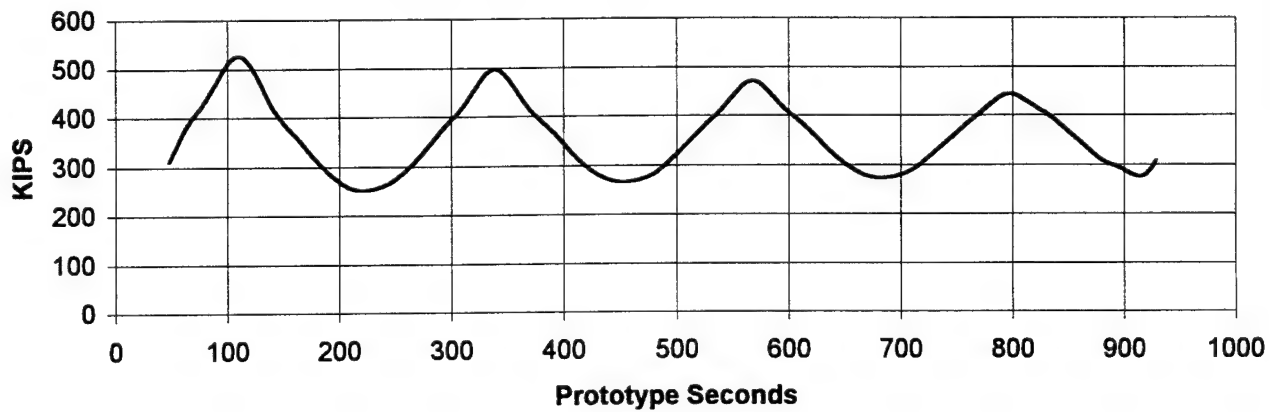


TEST A803 - ML_1 TENSION

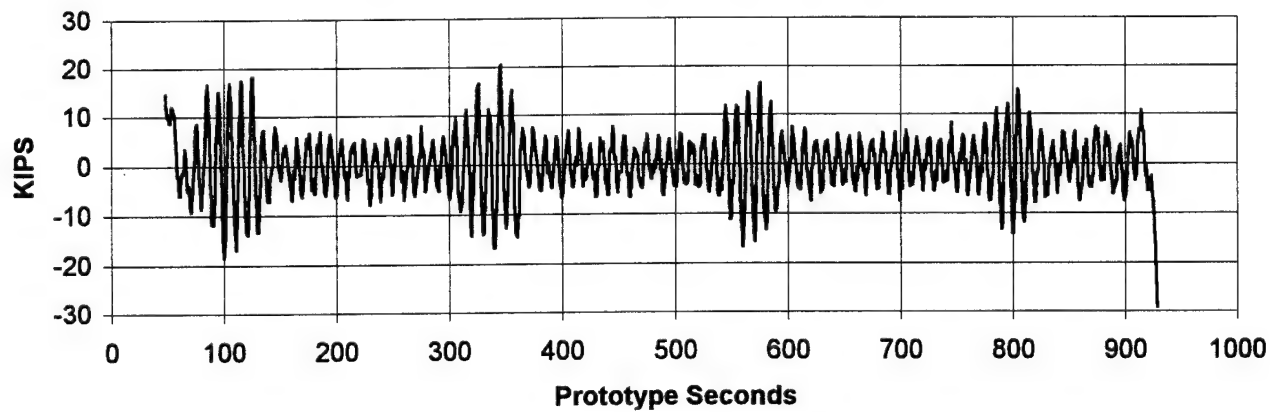
Unfiltered Time History



Filtered Low Frequency Time History

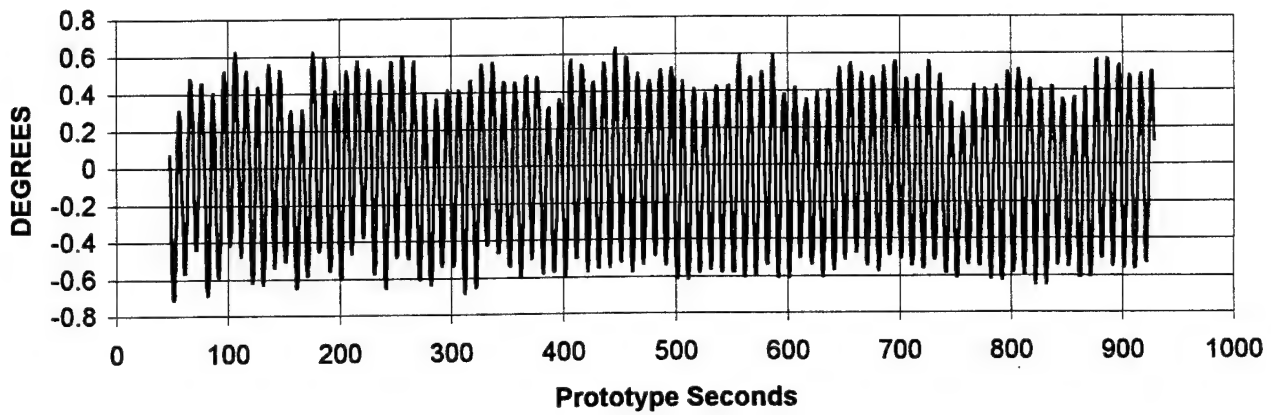


Filtered High Frequency Time History

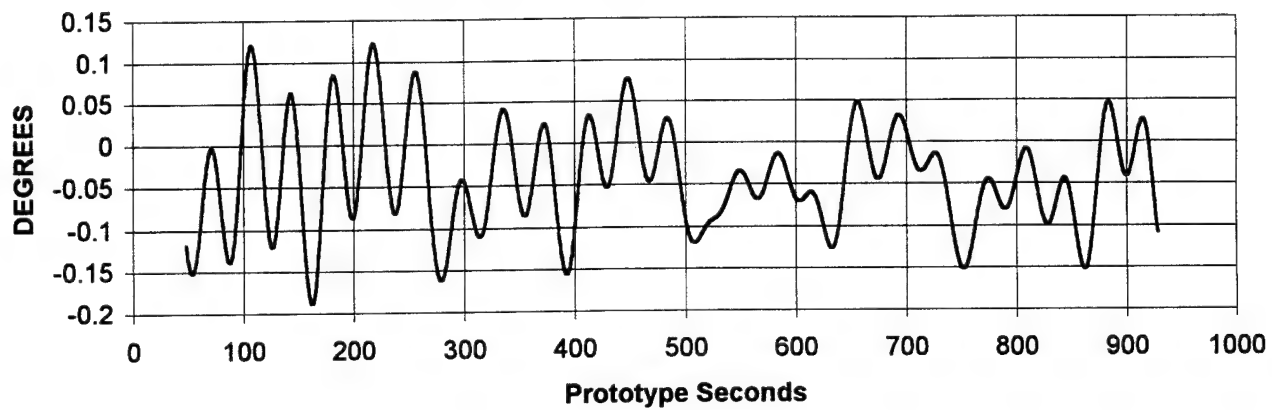


TEST A803 - PITCH

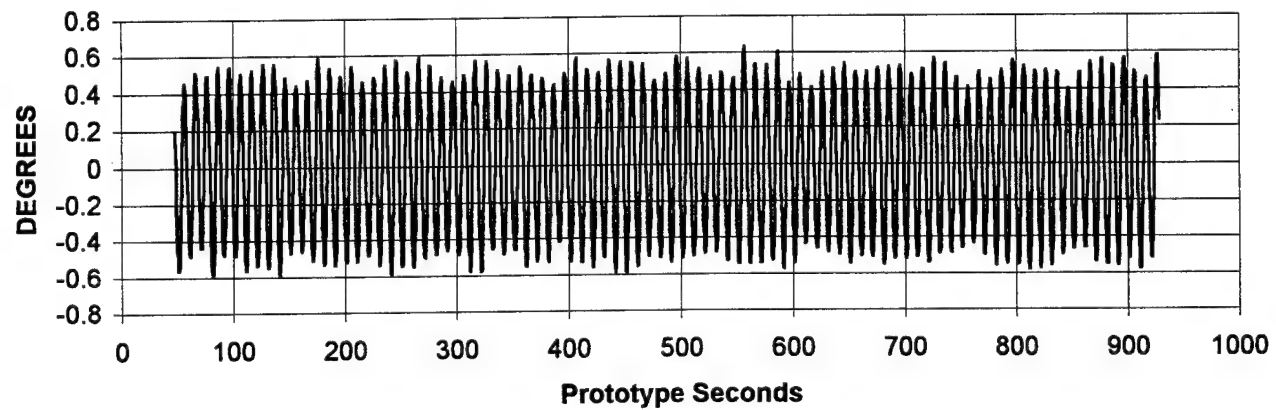
Unfiltered Time History



Filtered Low Frequency Time History

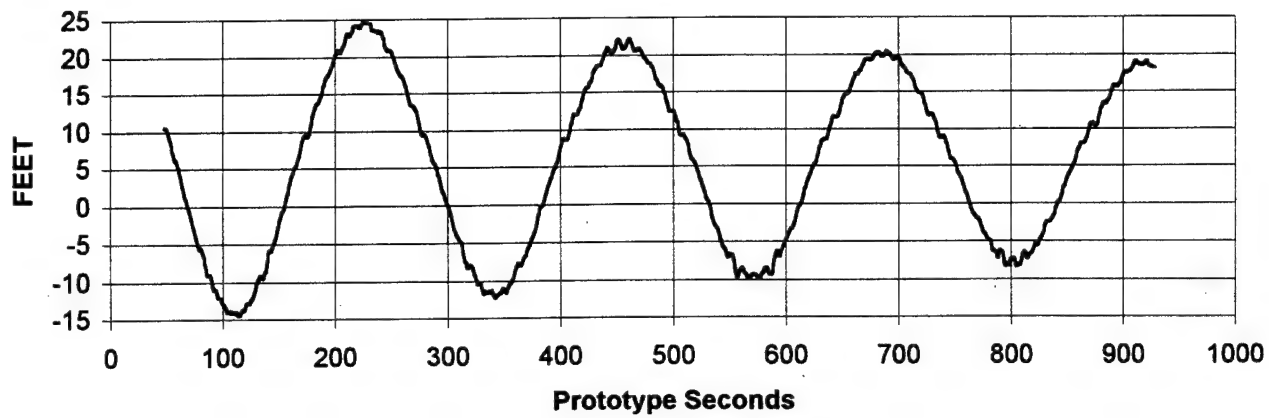


Filtered High Frequency Time History

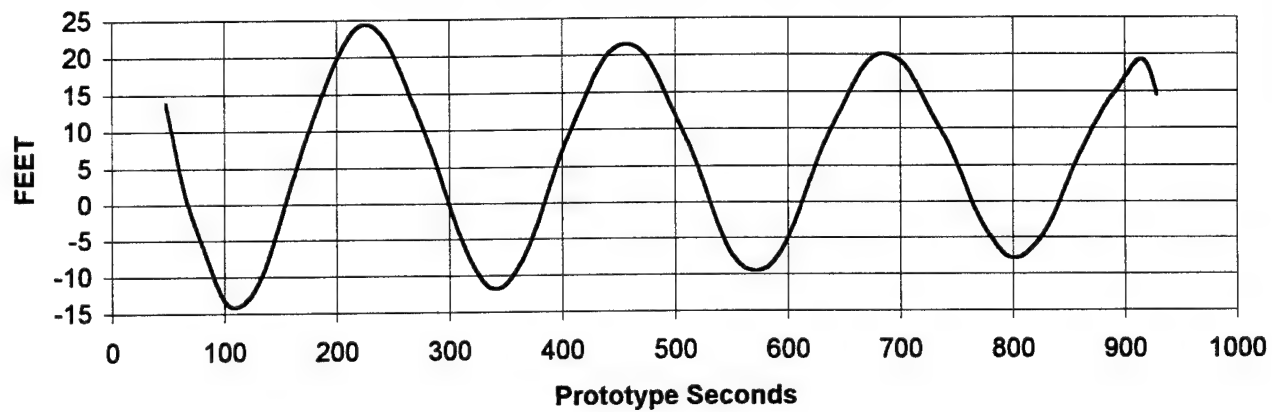


TEST A803 - PT SURGE

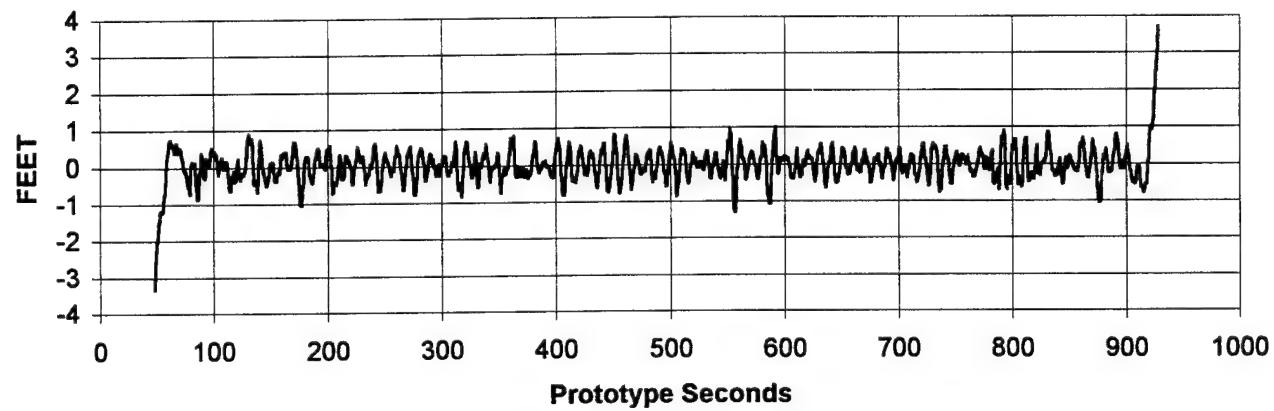
Unfiltered Time History



Filtered Low Frequency Time History

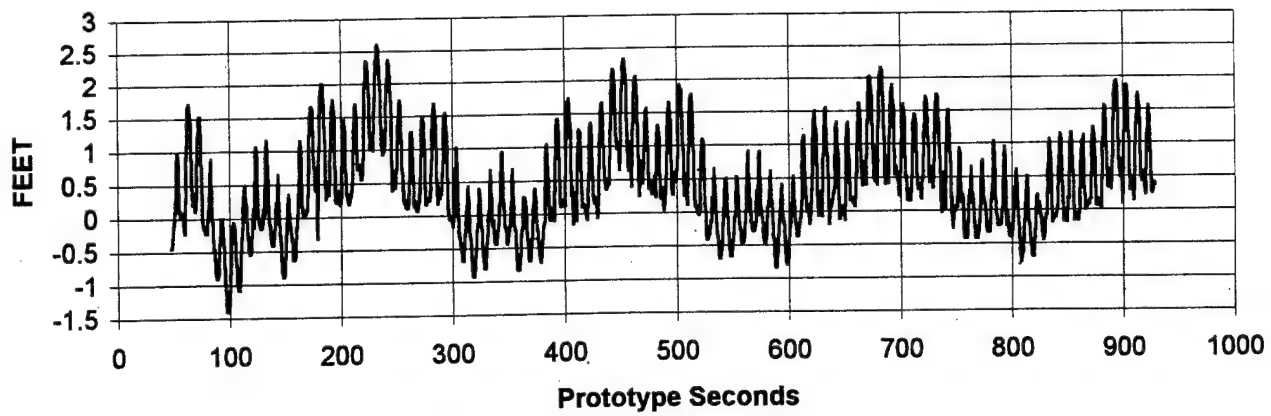


Filtered High Frequency Time History

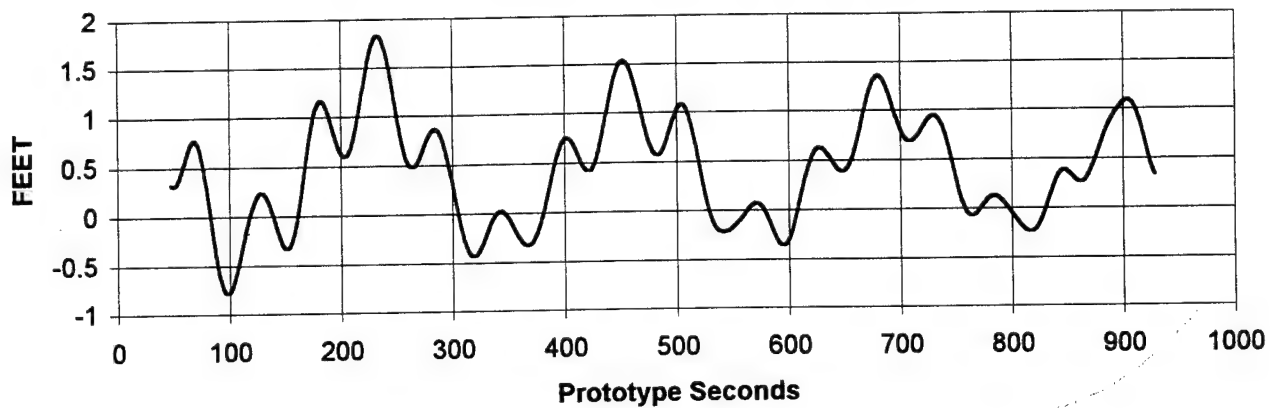


TEST A803 - PT HEAVE

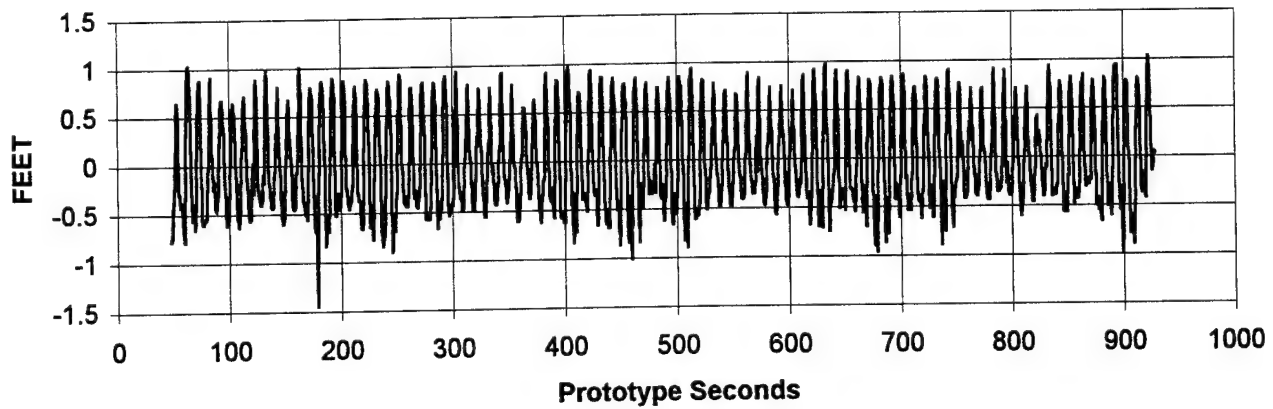
Unfiltered Time History



Filtered Low Frequency Time History

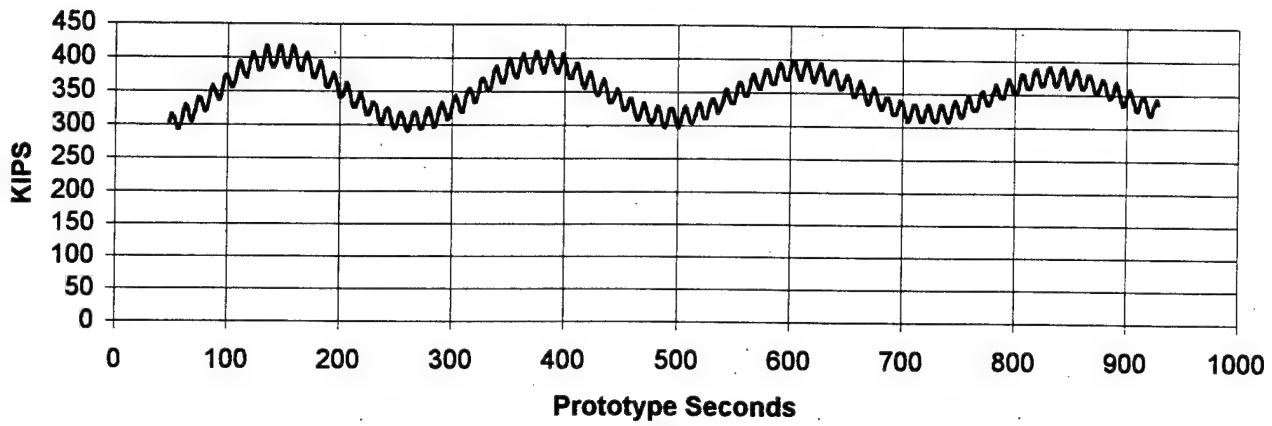


Filtered High Frequency Time History

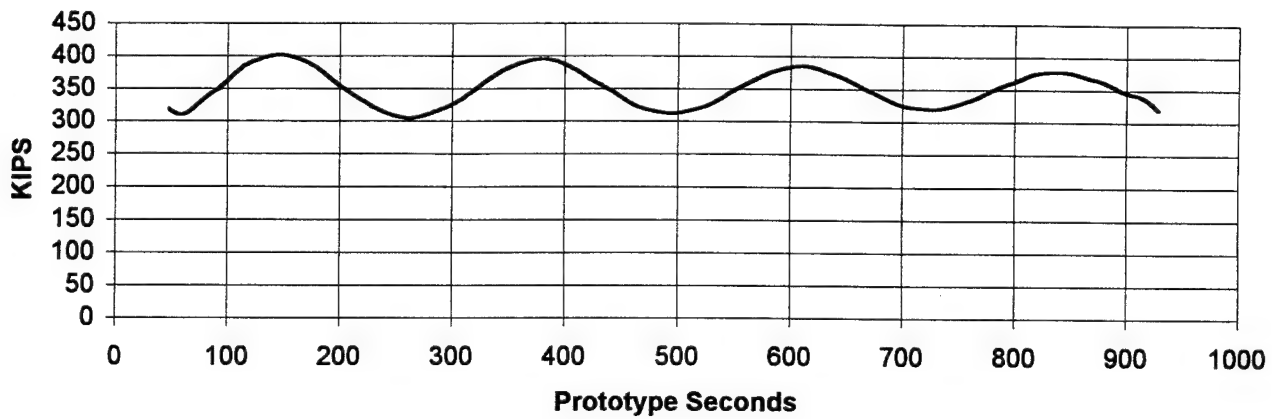


TEST A804 - ML_1 TENSION

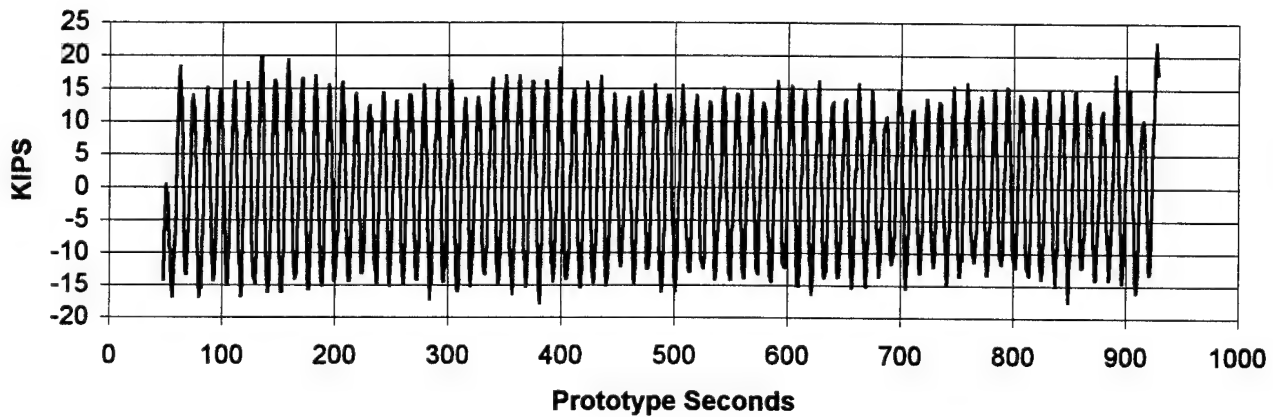
Unfiltered Time History



Filtered Low Frequency Time History

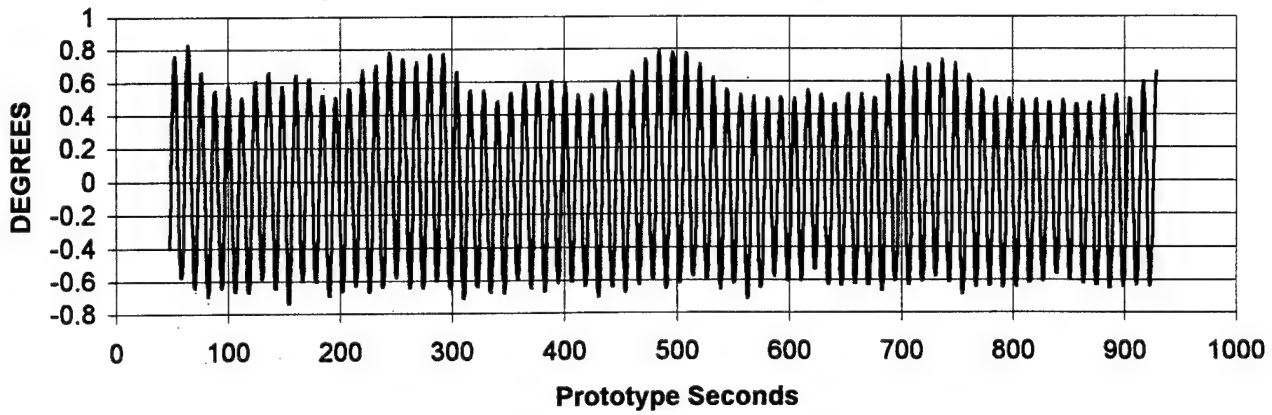


Filtered High Frequency Time History

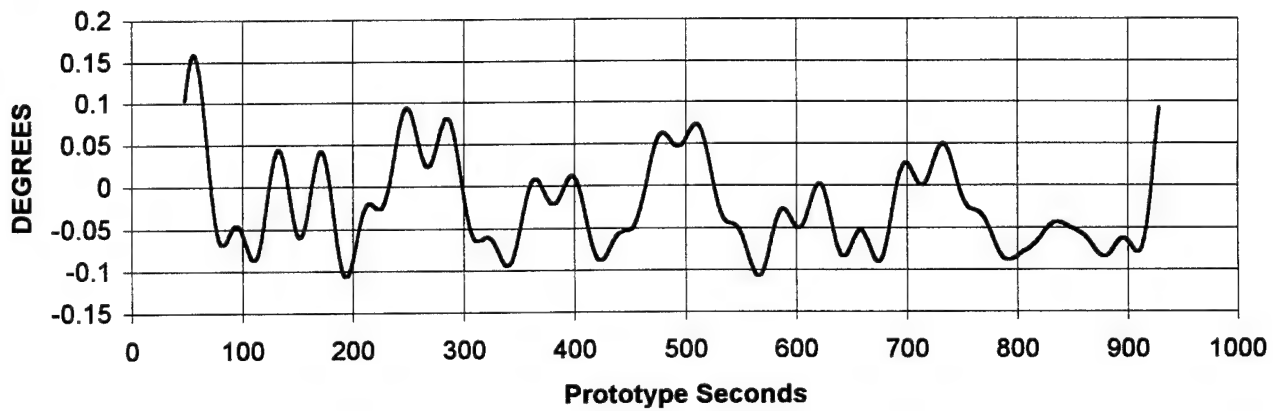


TEST A804 - PITCH

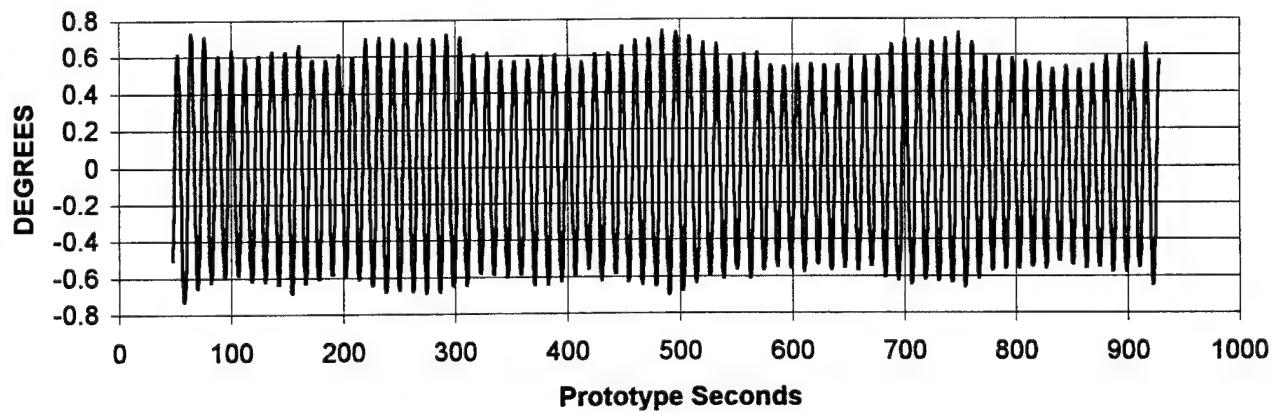
Unfiltered Time History



Filtered Low Frequency Time History

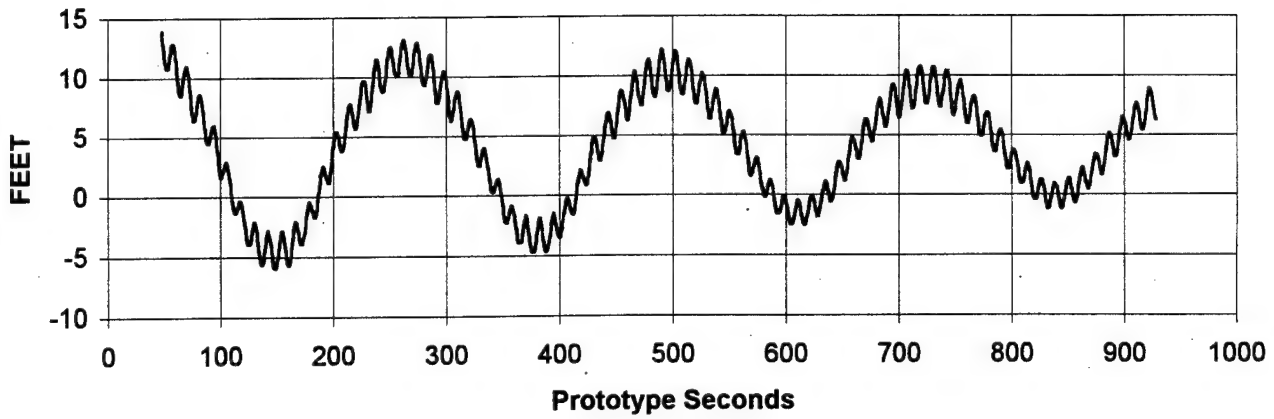


Filtered High Frequency Time History

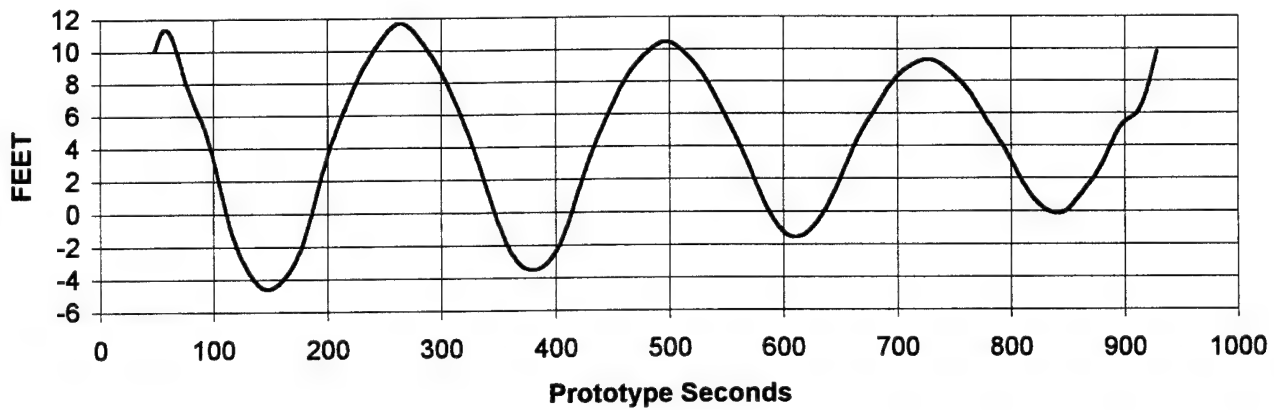


TEST A804 - PT SURGE

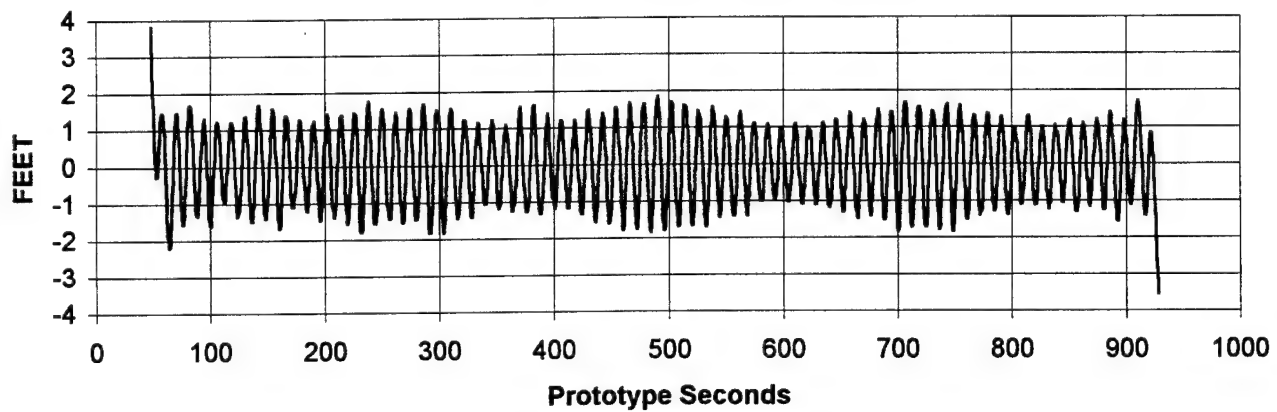
Unfiltered Time History



Filtered Low Frequency Time History

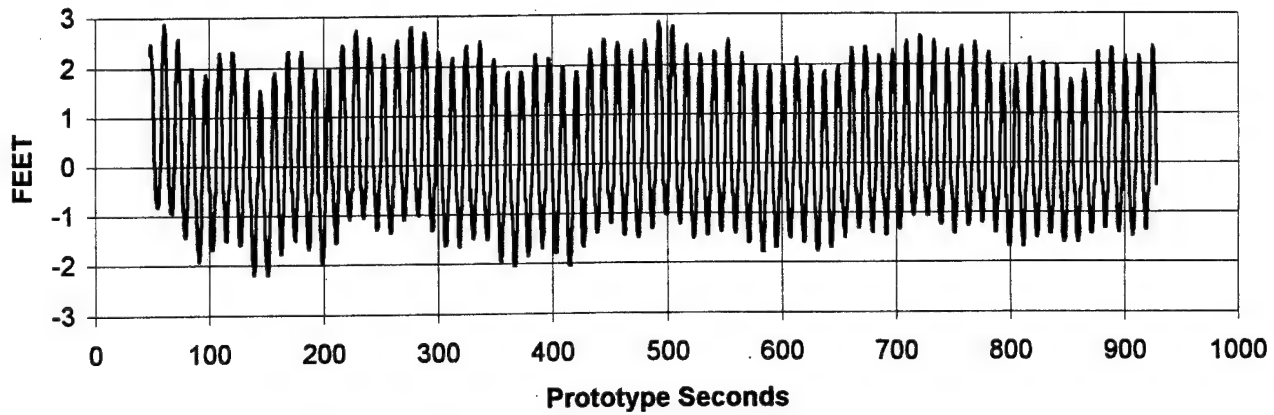


Filtered High Frequency Time History

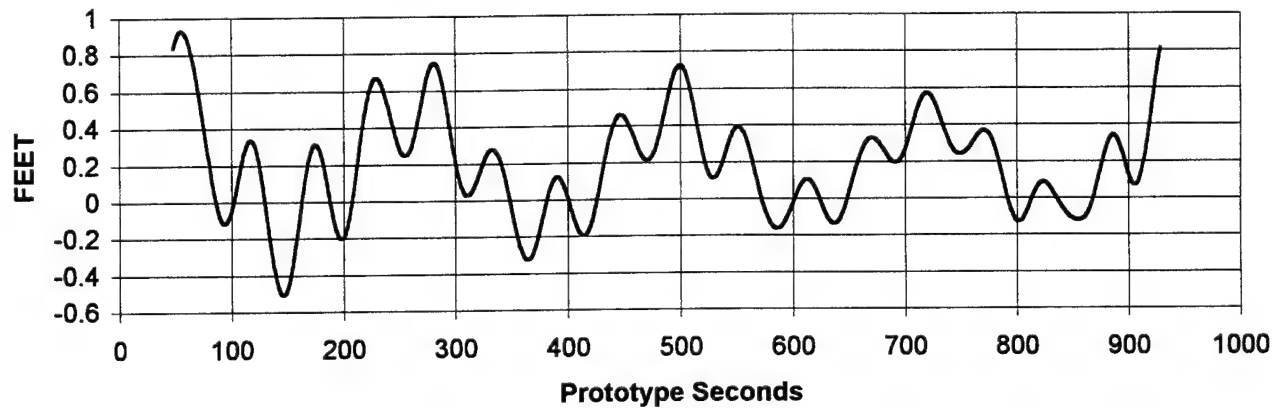


TEST A804 - PT HEAVE

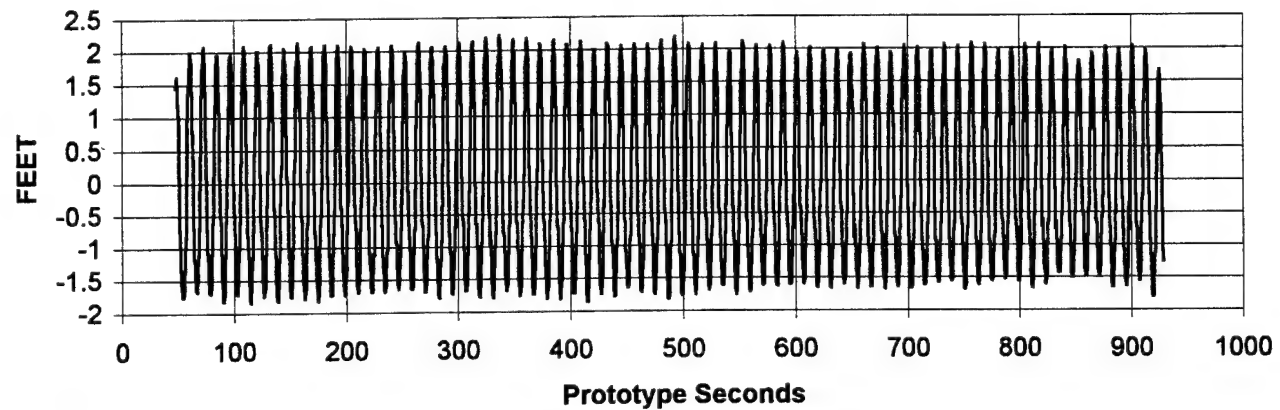
Unfiltered Time History



Filtered Low Frequency Time History

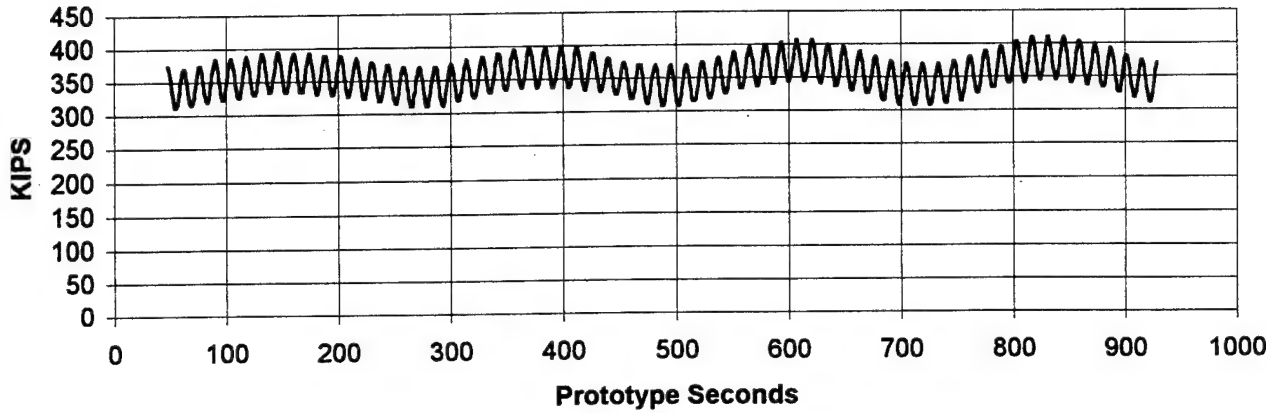


Filtered High Frequency Time History

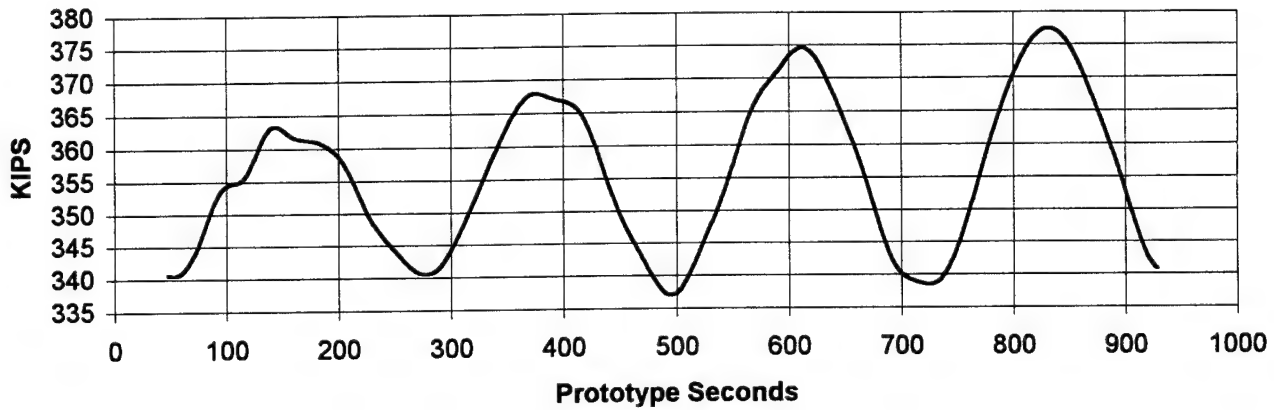


TEST A805 - ML_1 TENSION

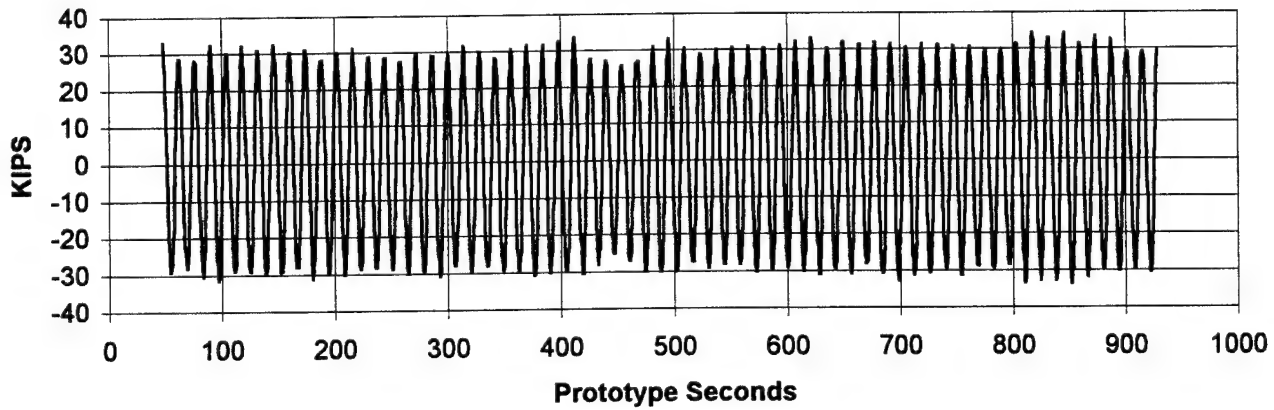
Unfiltered Time History



Filtered Low Frequency Time History

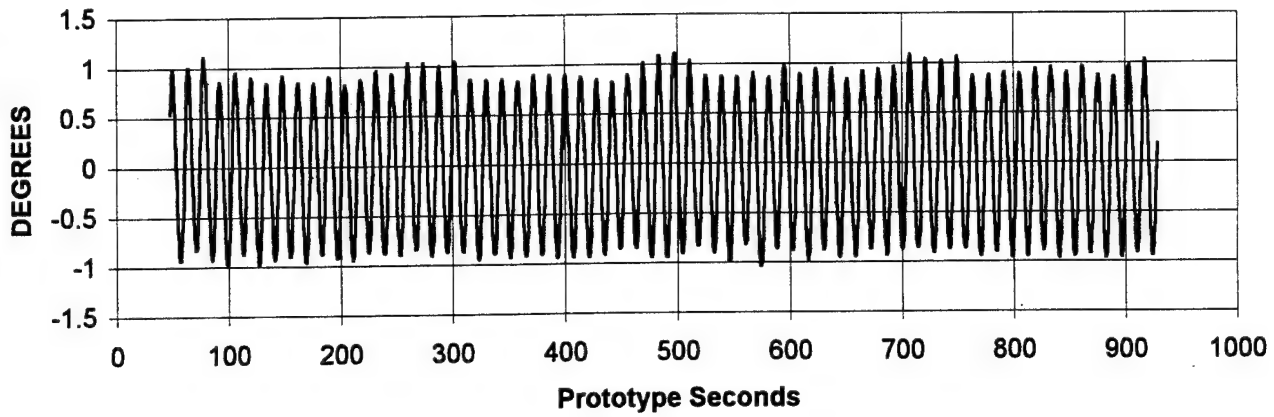


Filtered High Frequency Time History

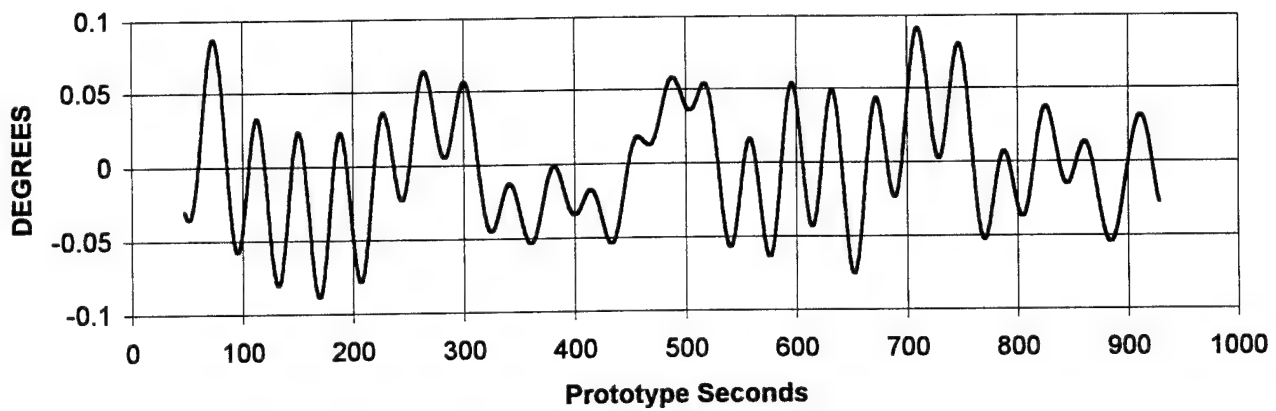


TEST A805 - PITCH

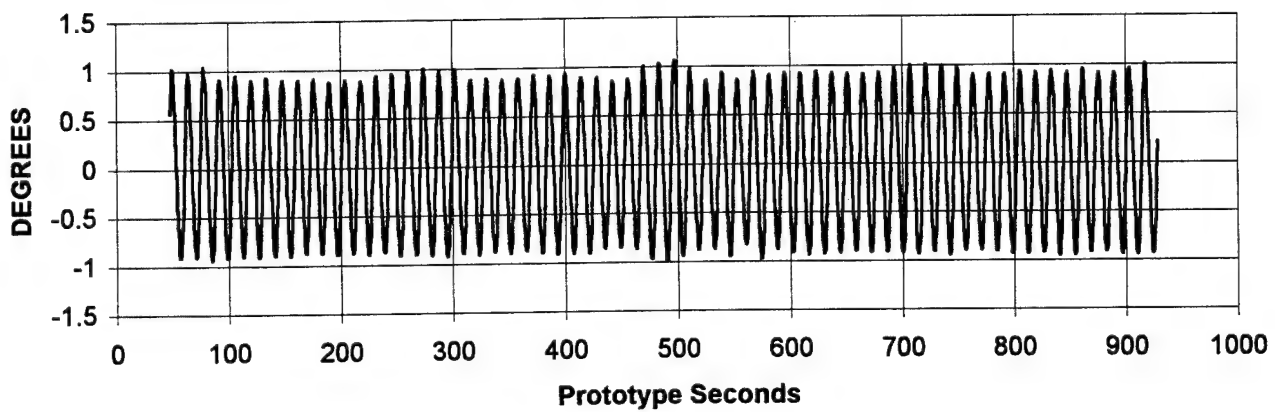
Unfiltered Time History



Filtered Low Frequency Time History

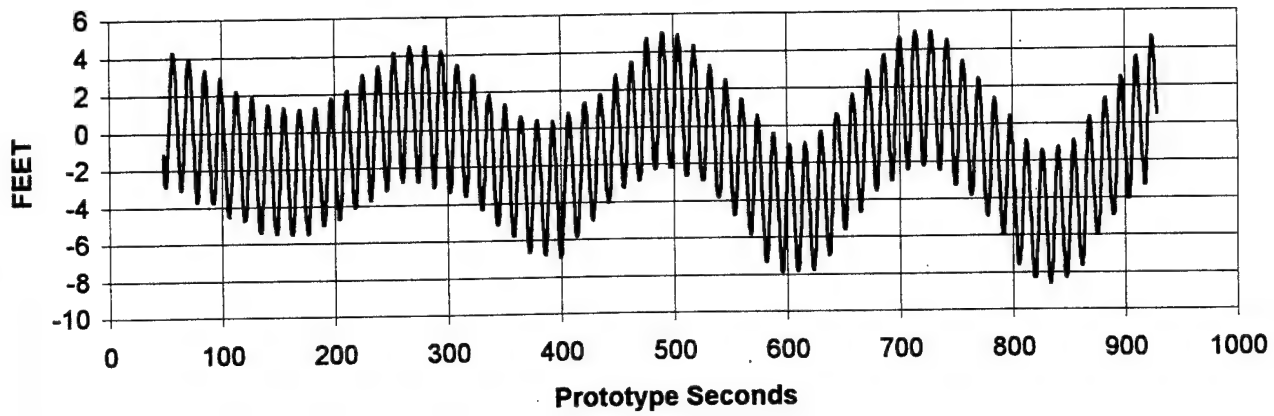


Filtered High Frequency Time History

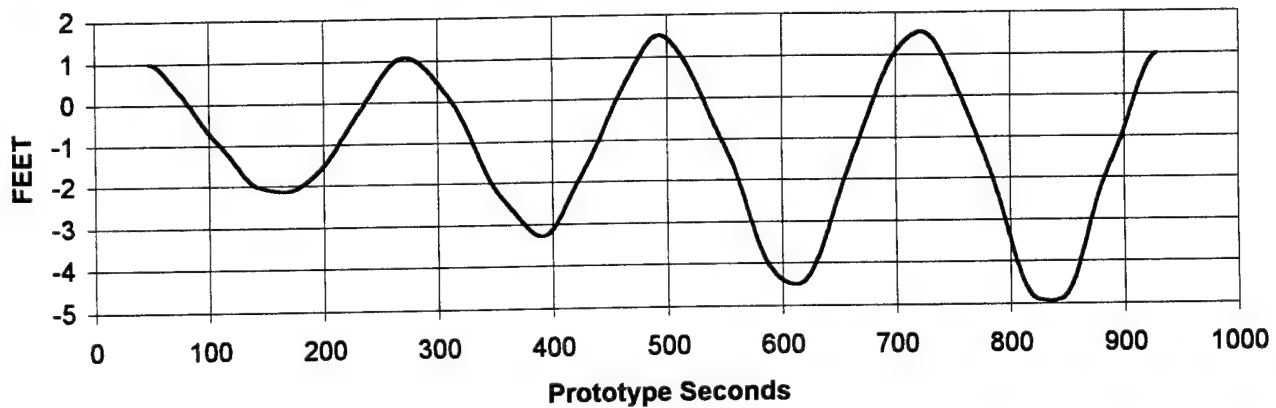


TEST A805 - PT SURGE

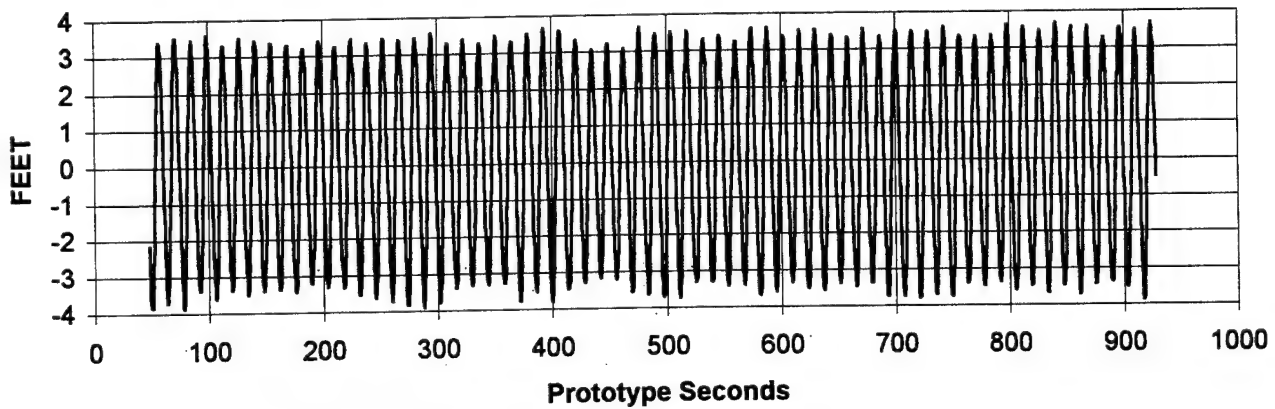
Unfiltered Time History



Filtered Low Frequency Time History

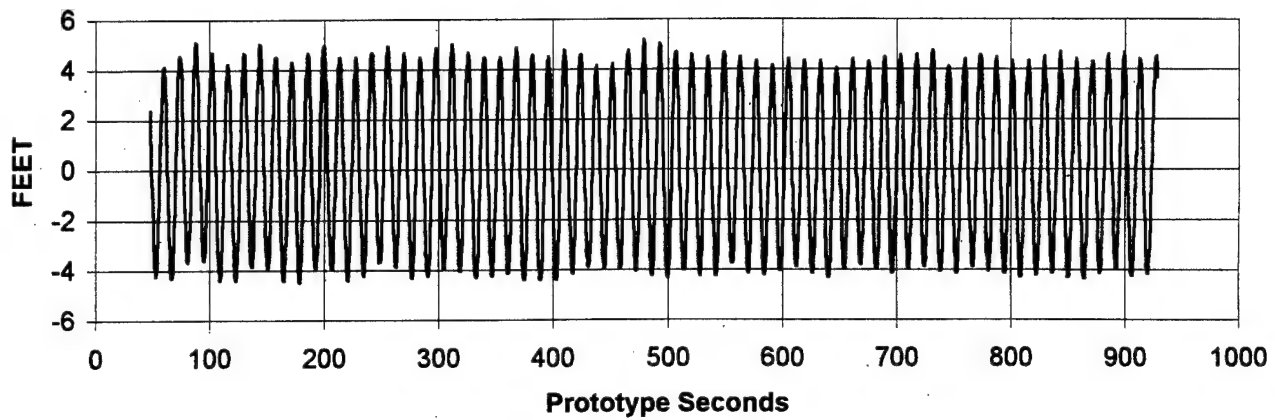


Filtered High Frequency Time History

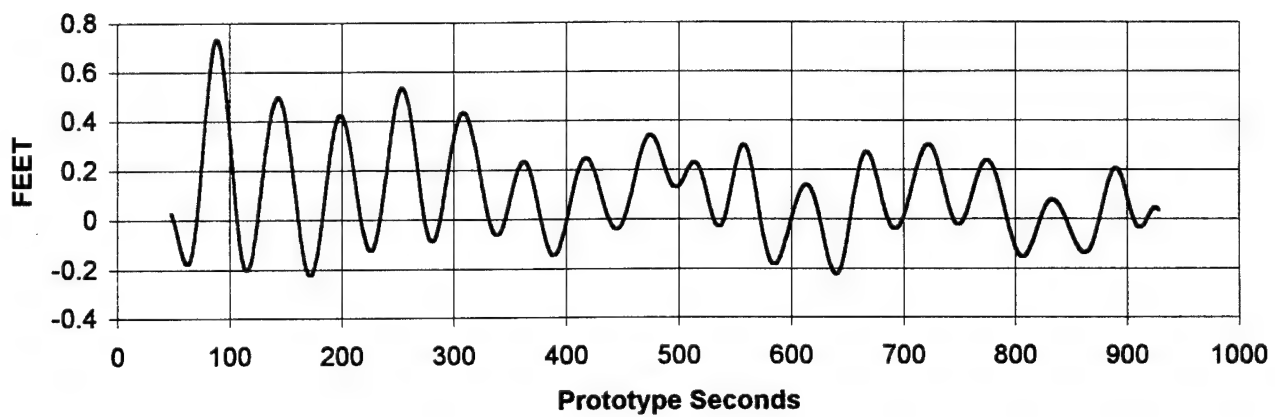


TEST A805 - PT HEAVE

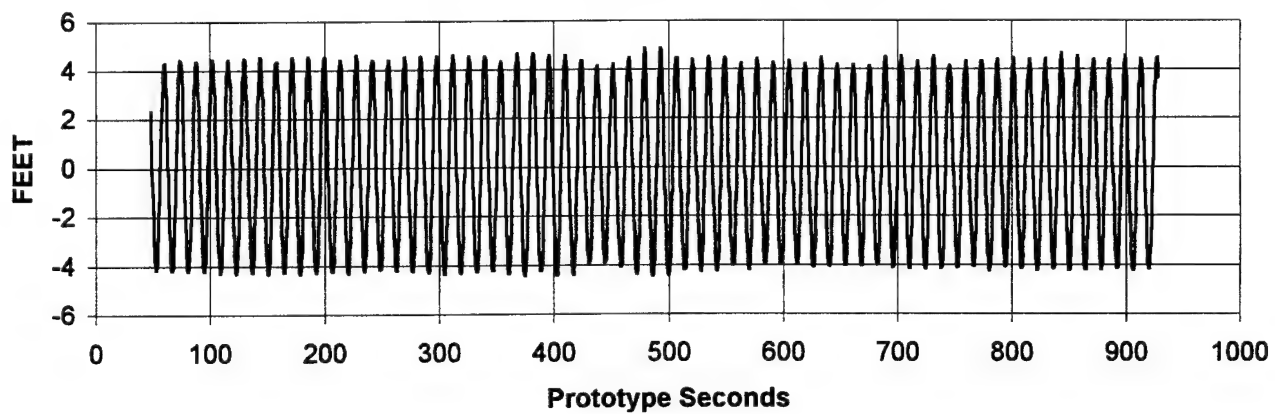
Unfiltered Time History



Filtered Low Frequency Time History

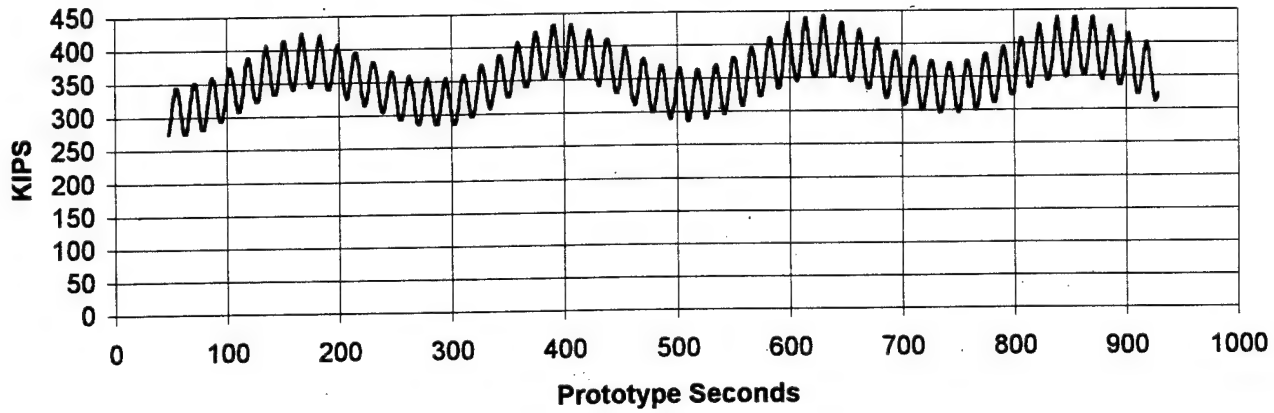


Filtered High Frequency Time History

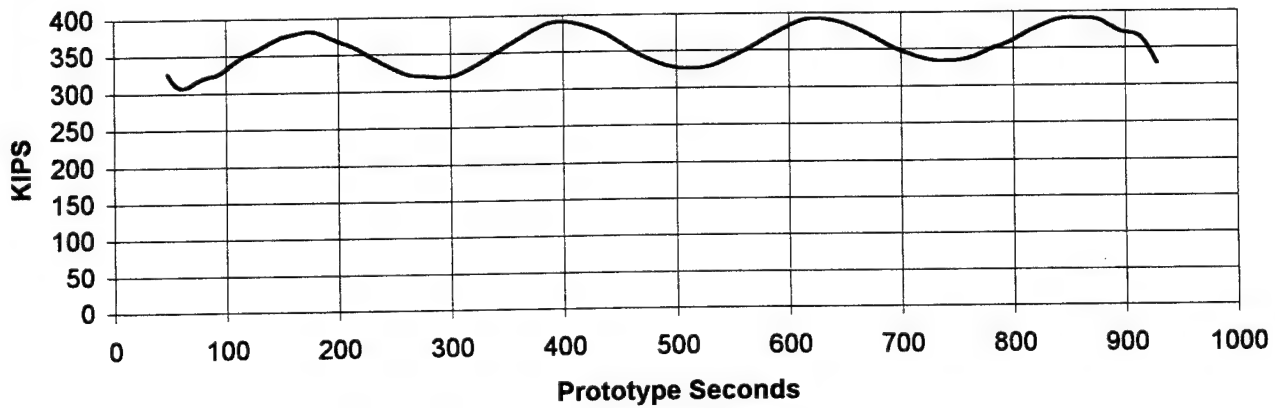


TEST A806 - ML_1 TENSION

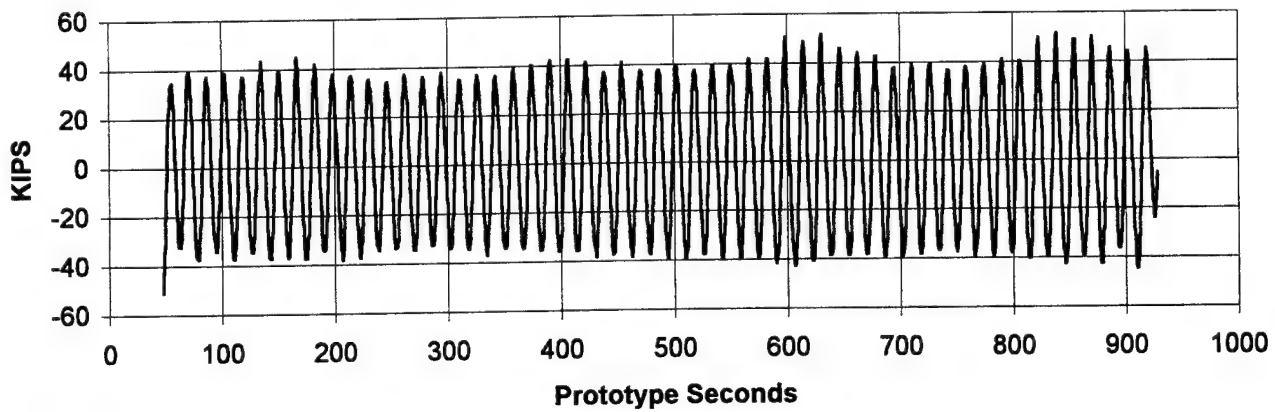
Unfiltered Time History



Filtered Low Frequency Time History

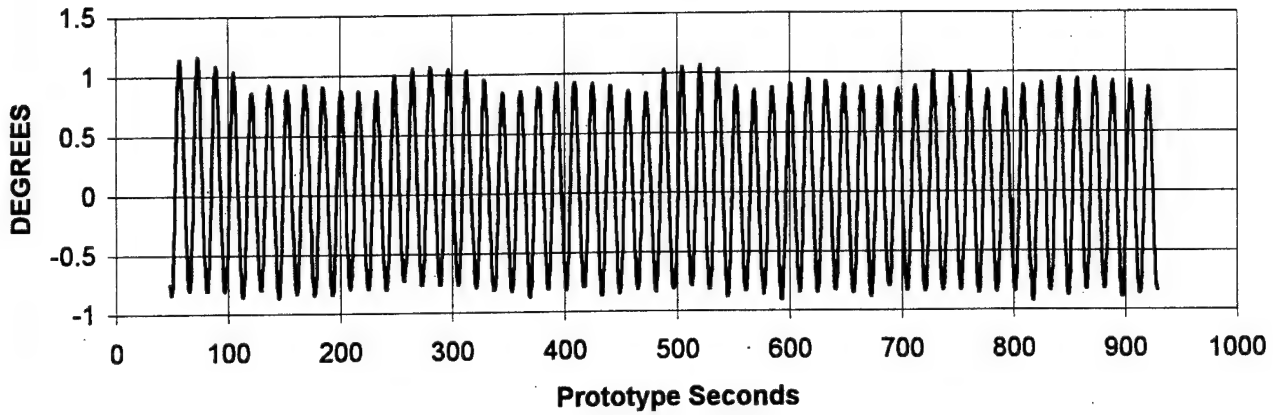


Filtered High Frequency Time History

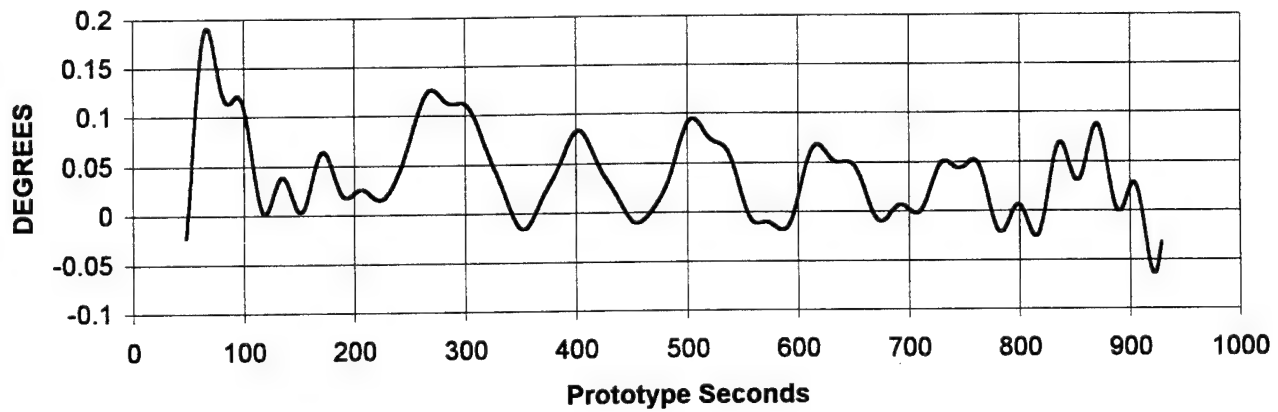


TEST A806 - PITCH

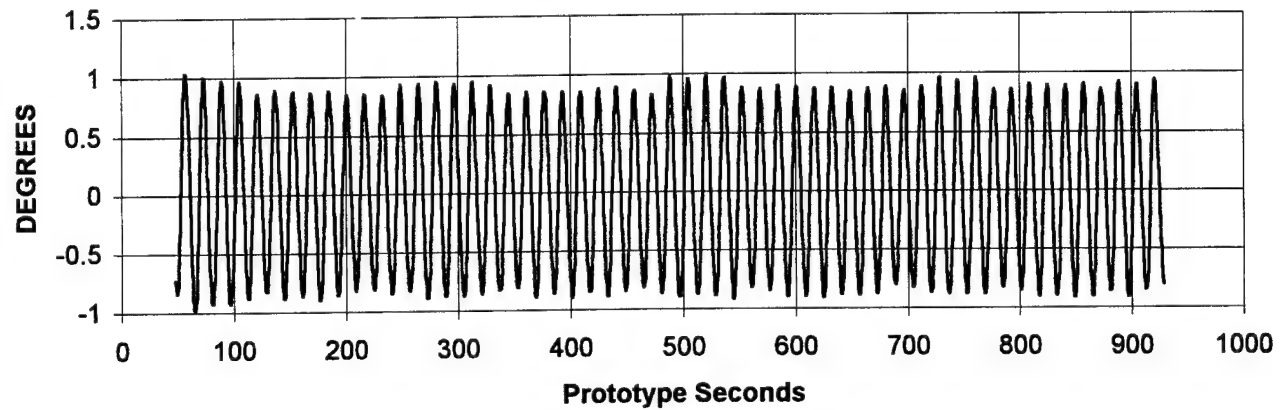
Unfiltered Time History



Filtered Low Frequency Time History

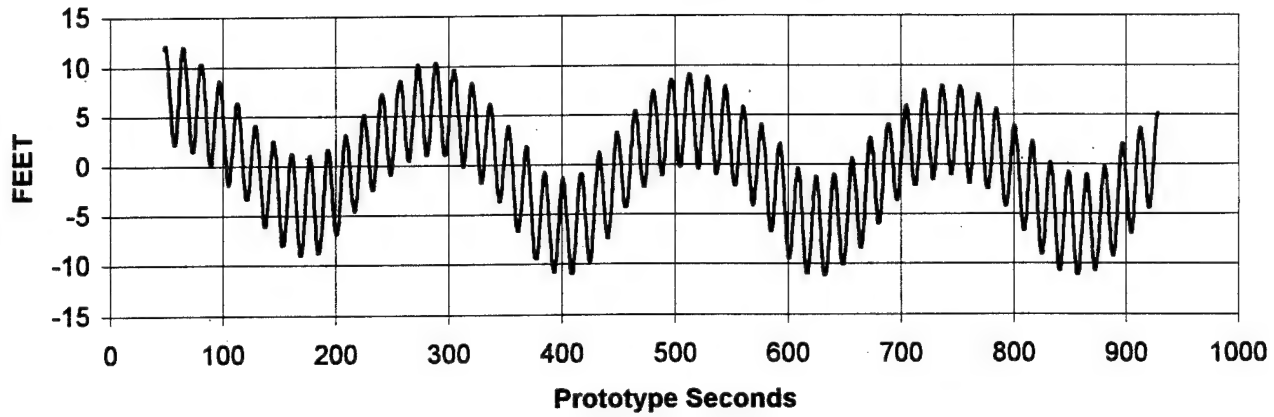


Filtered High Frequency Time History

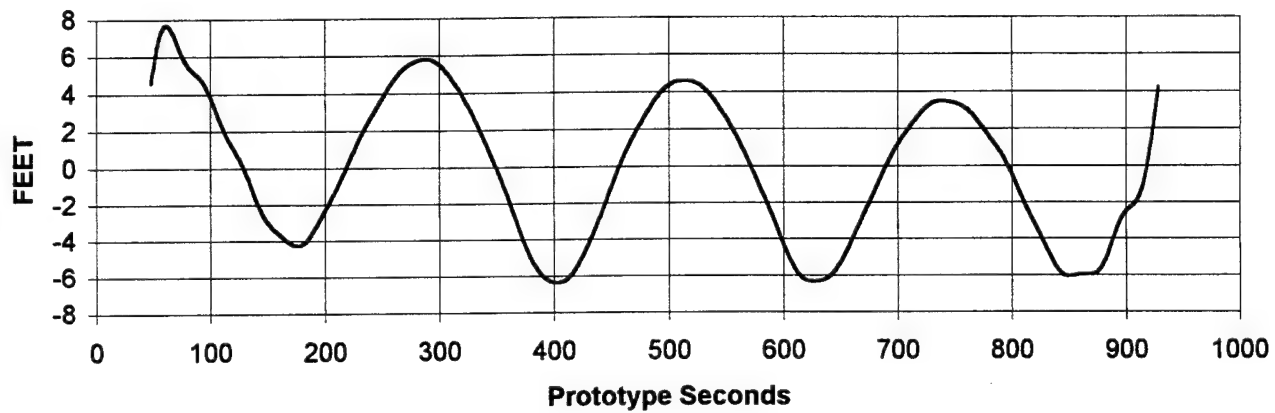


TEST A806 - PT SURGE

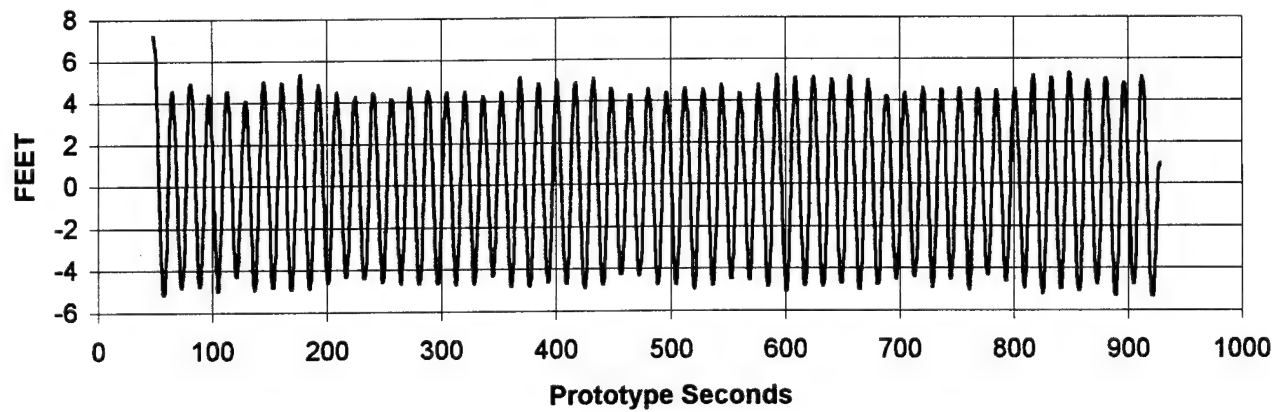
Unfiltered Time History



Filtered Low Frequency Time History

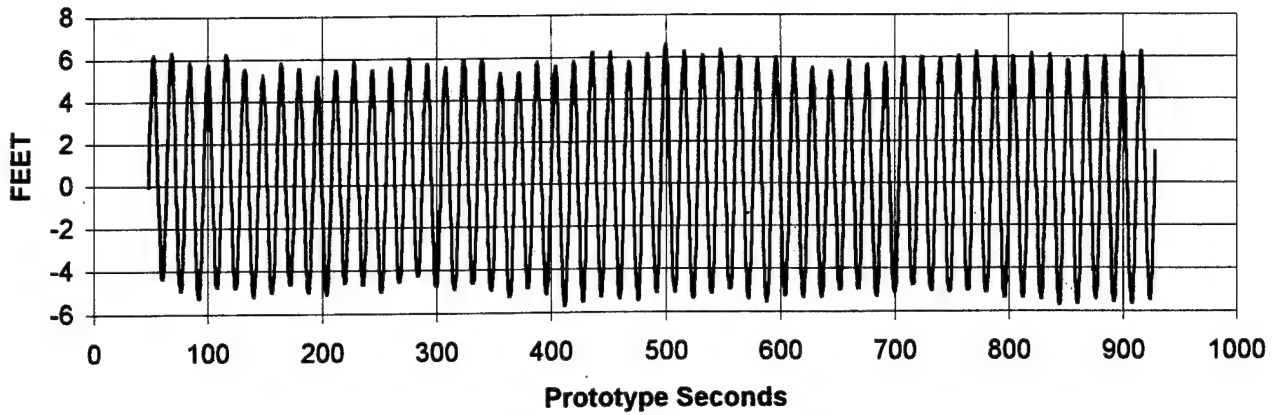


Filtered High Frequency Time History

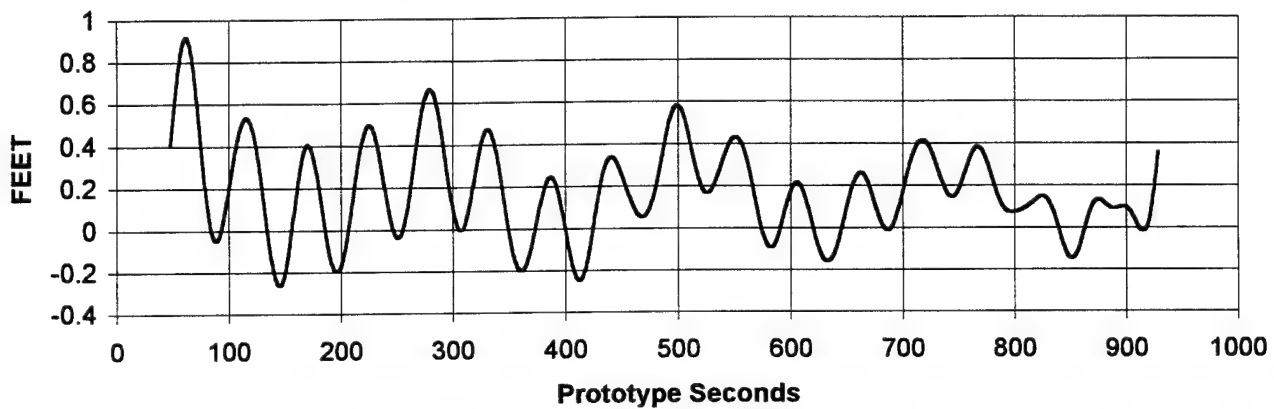


TEST A806 - PT HEAVE

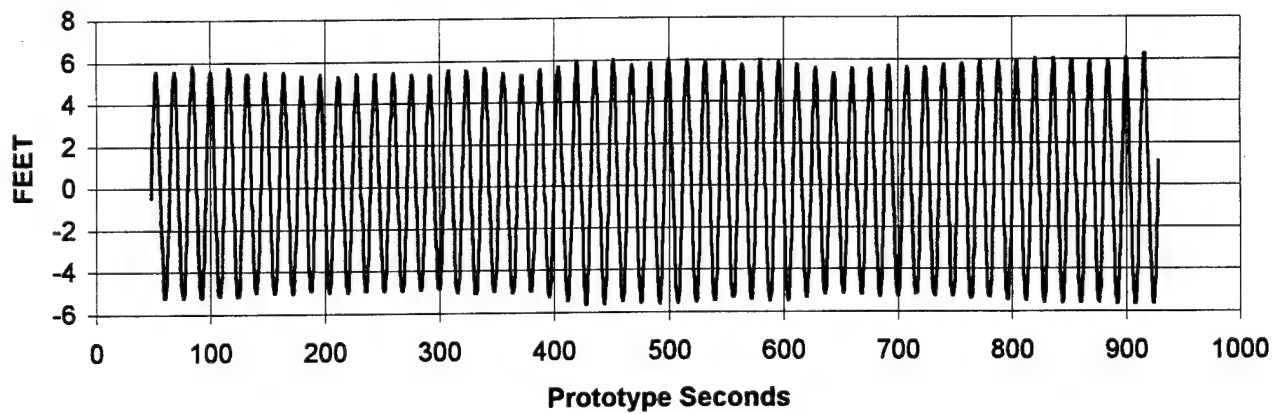
Unfiltered Time History



Filtered Low Frequency Time History

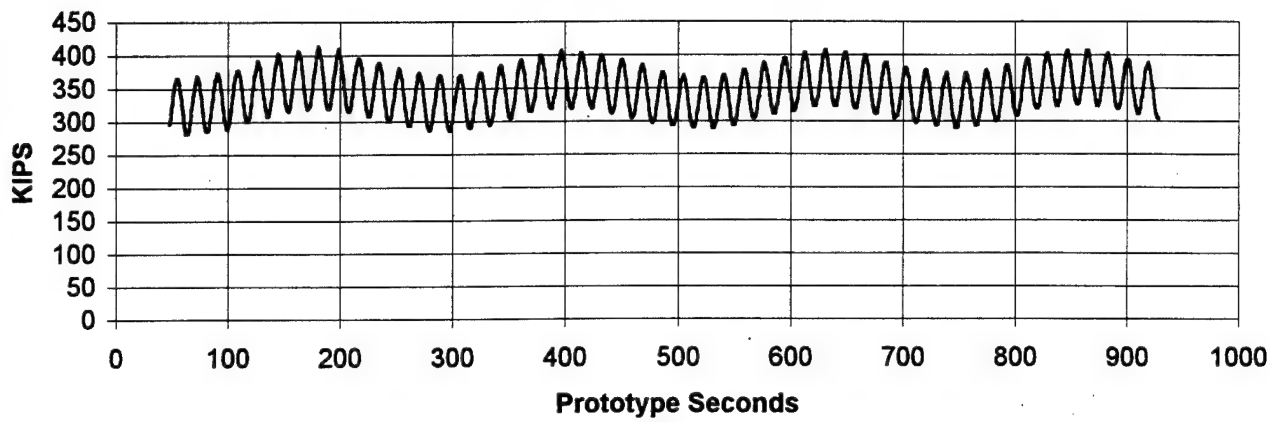


Filtered High Frequency Time History

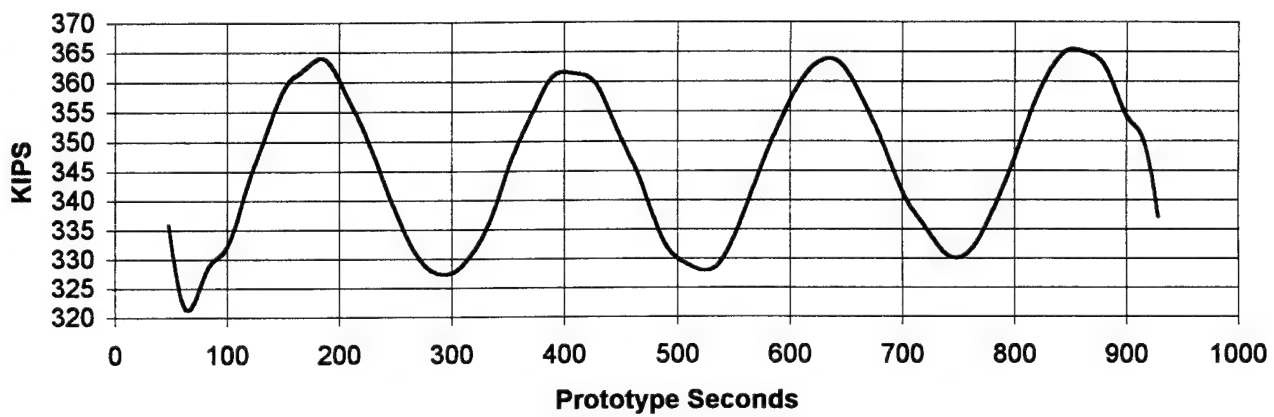


TEST A807 - ML_1 TENSION

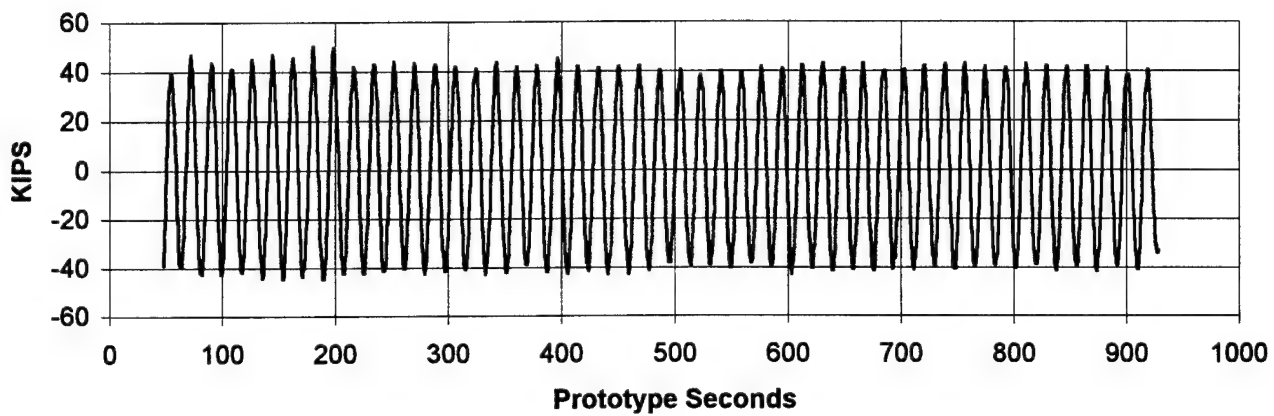
Unfiltered Time History



Filtered Low Frequency Time History

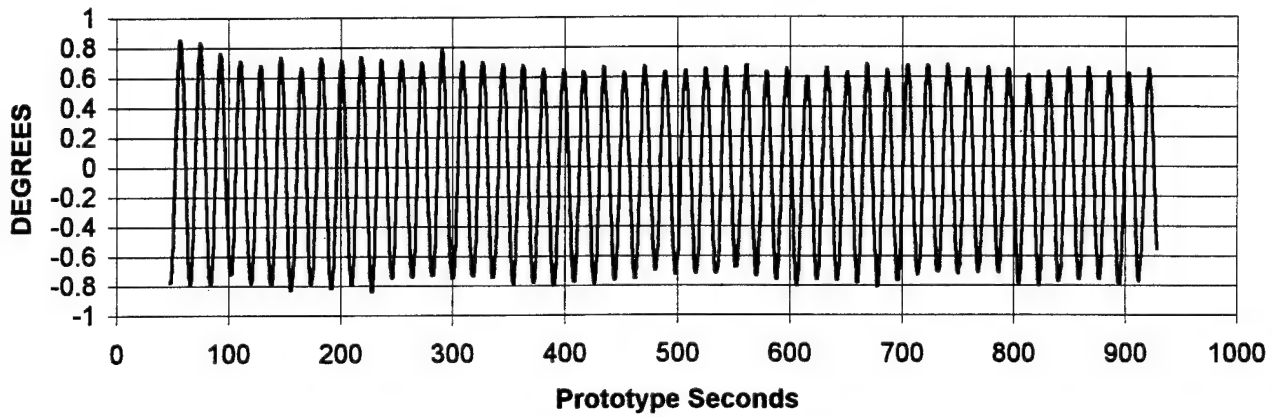


Filtered High Frequency Time History

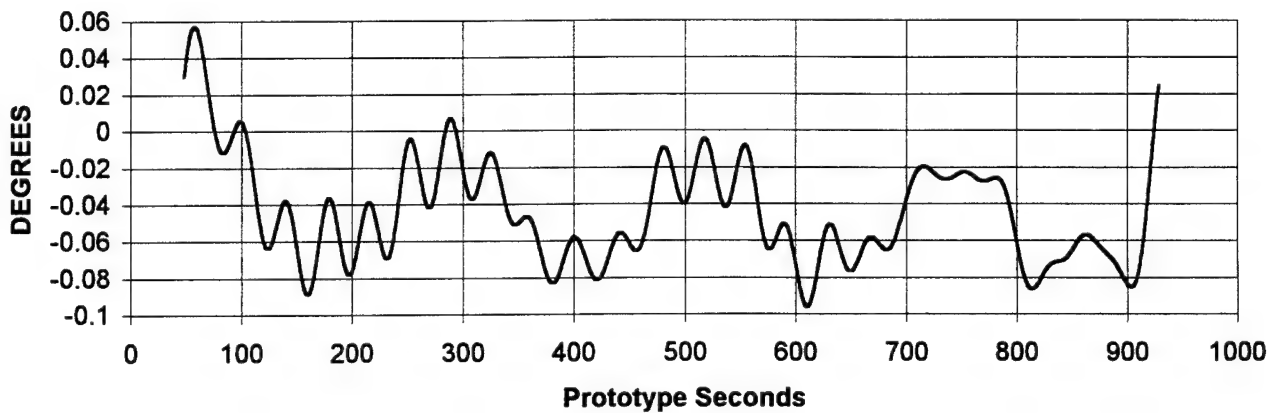


TEST A807 - PITCH

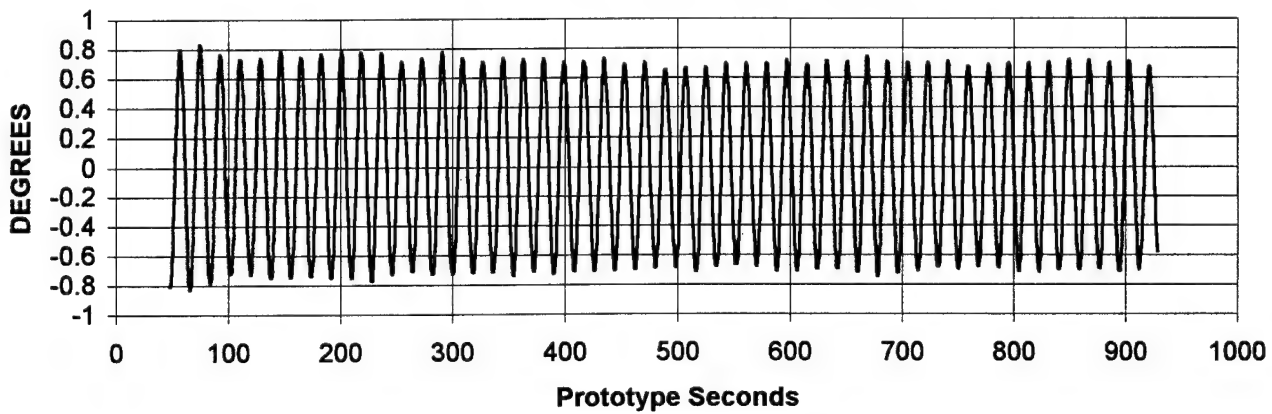
Unfiltered Time History



Filtered Low Frequency Time History

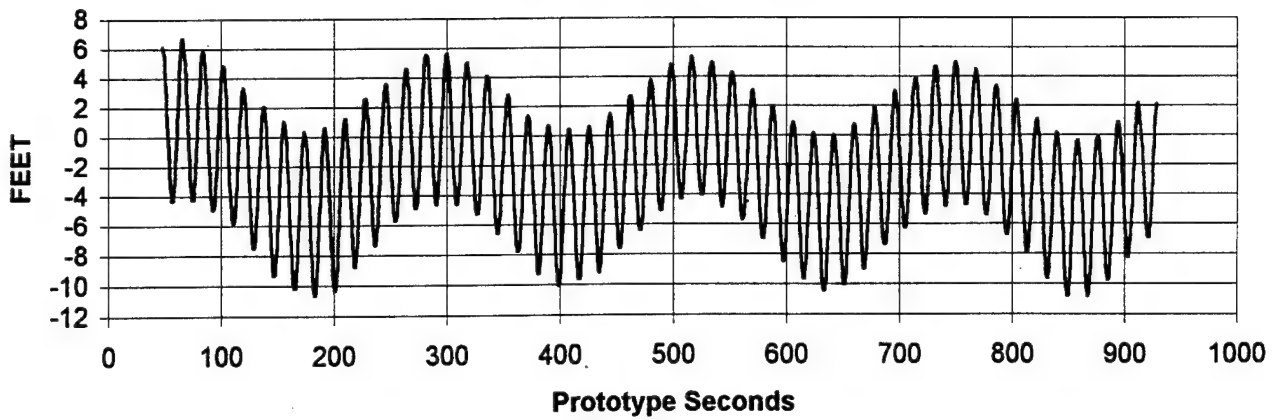


Filtered High Frequency Time History

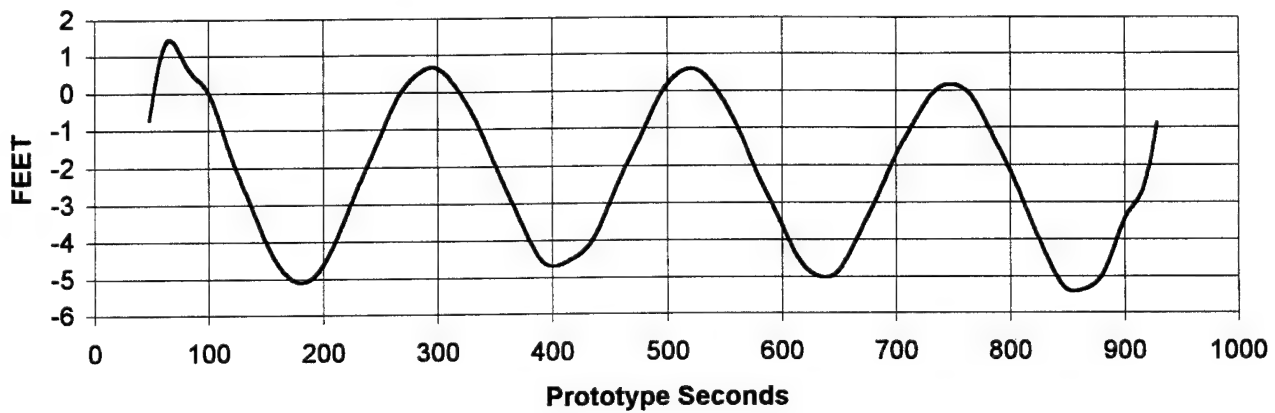


TEST A807 - PT SURGE

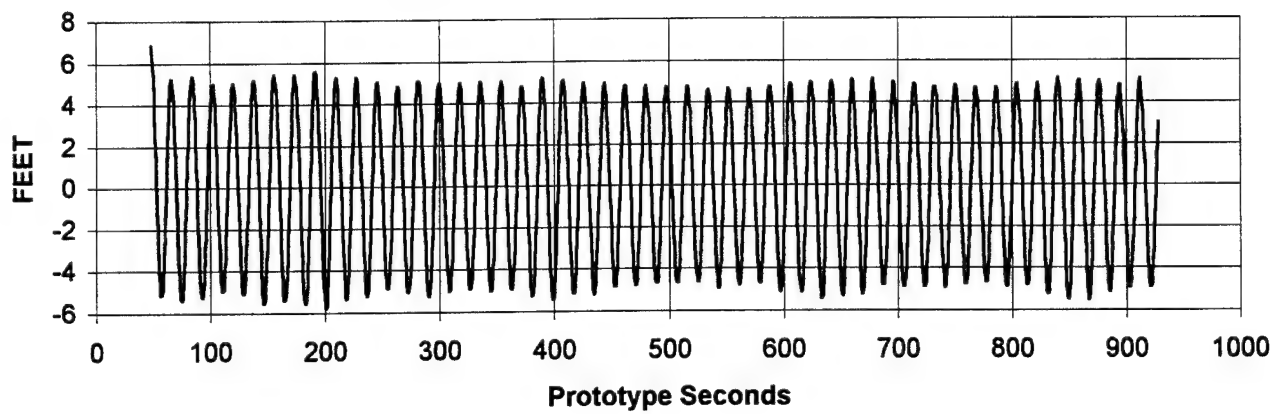
Unfiltered Time History



Filtered Low Frequency Time History

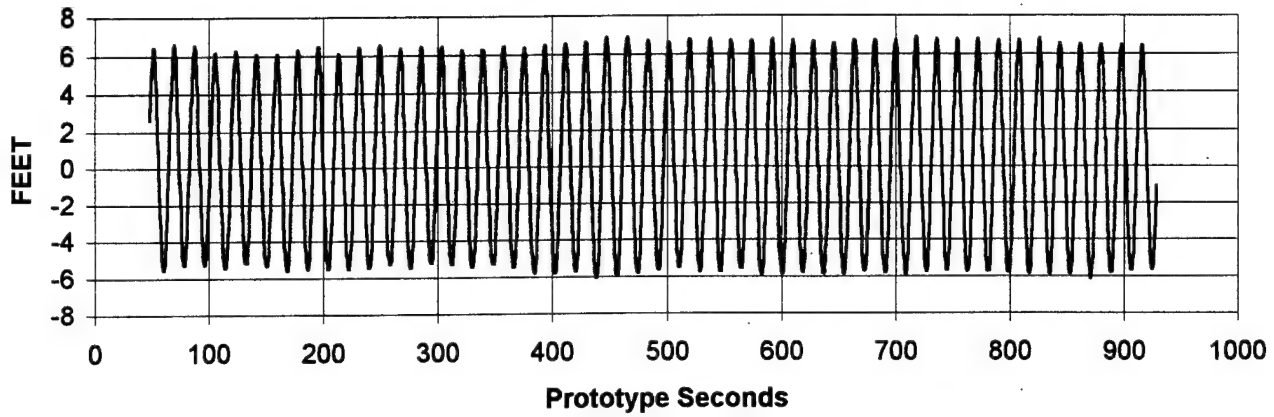


Filtered High Frequency Time History

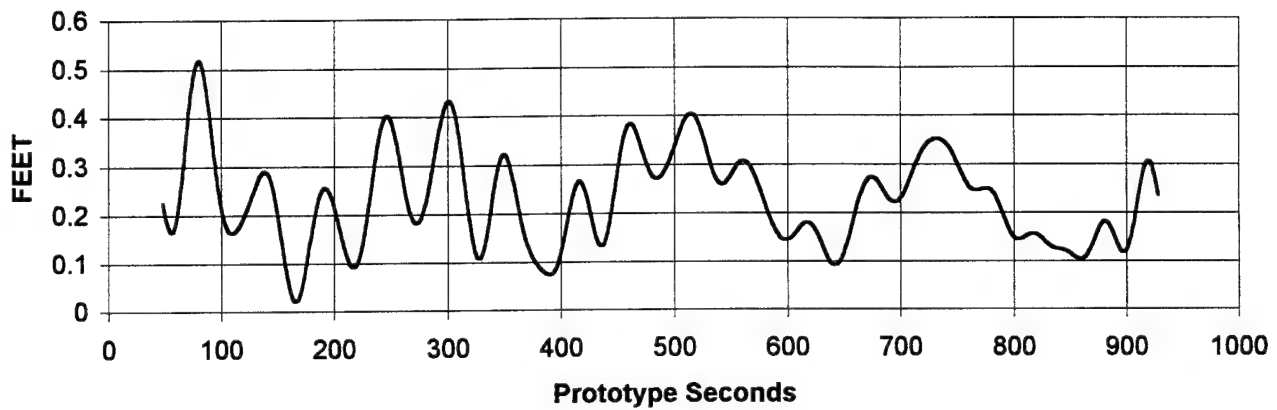


TEST A807 - PT HEAVE

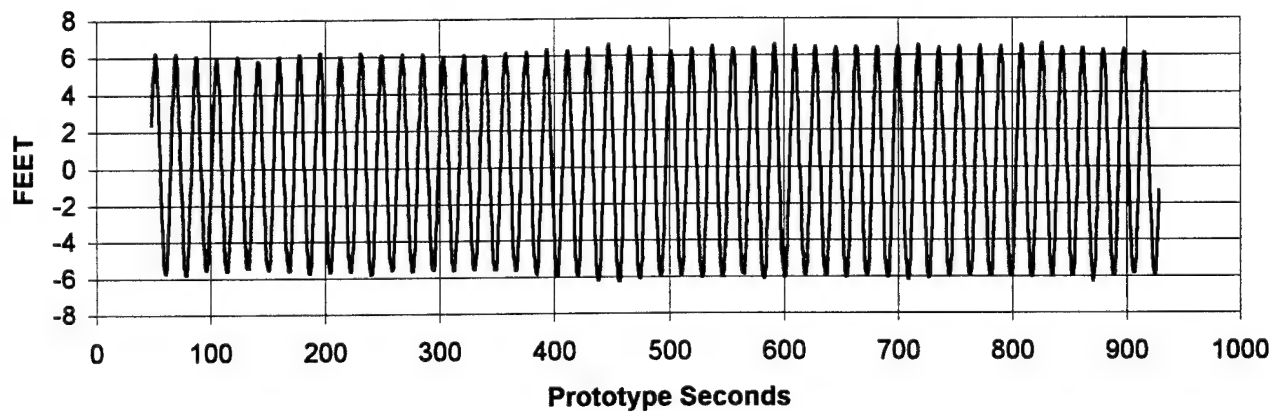
Unfiltered Time History



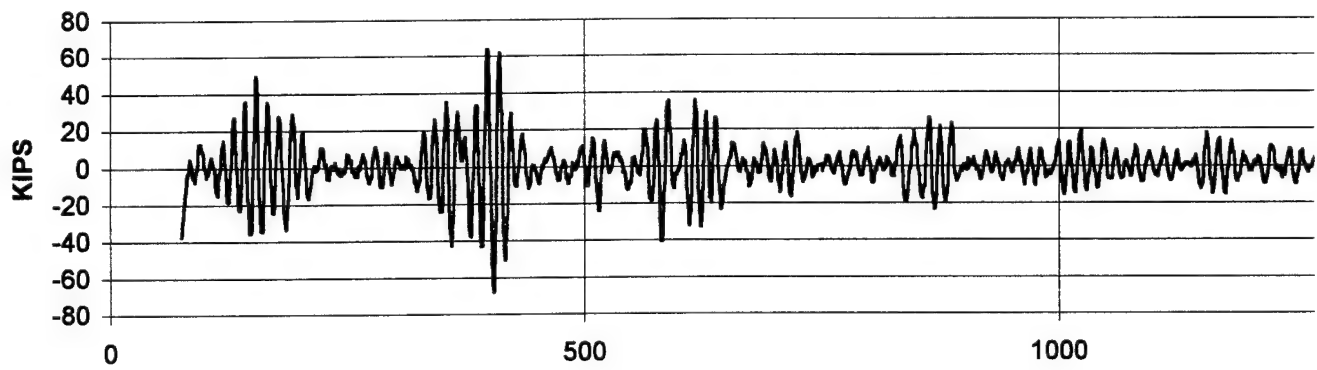
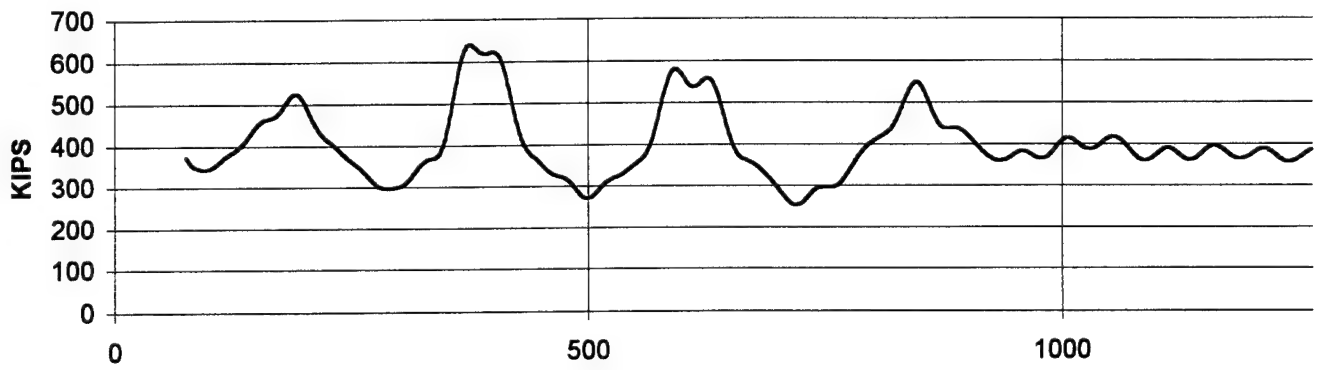
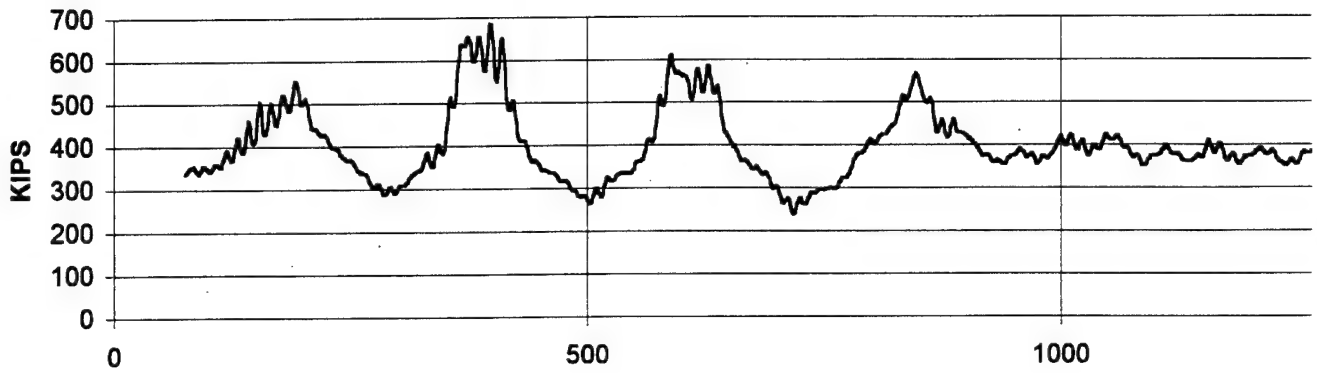
Filtered Low Frequency Time History



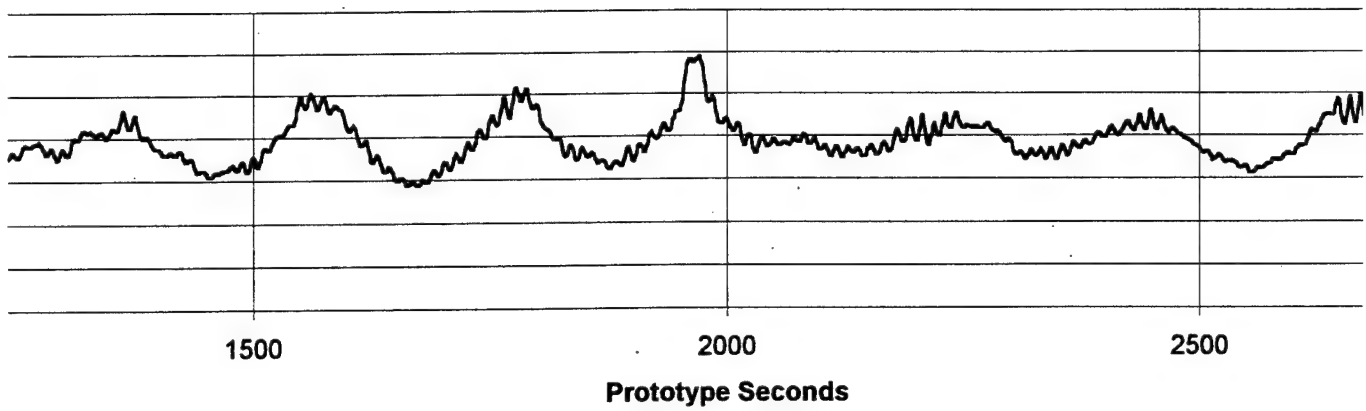
Filtered High Frequency Time History



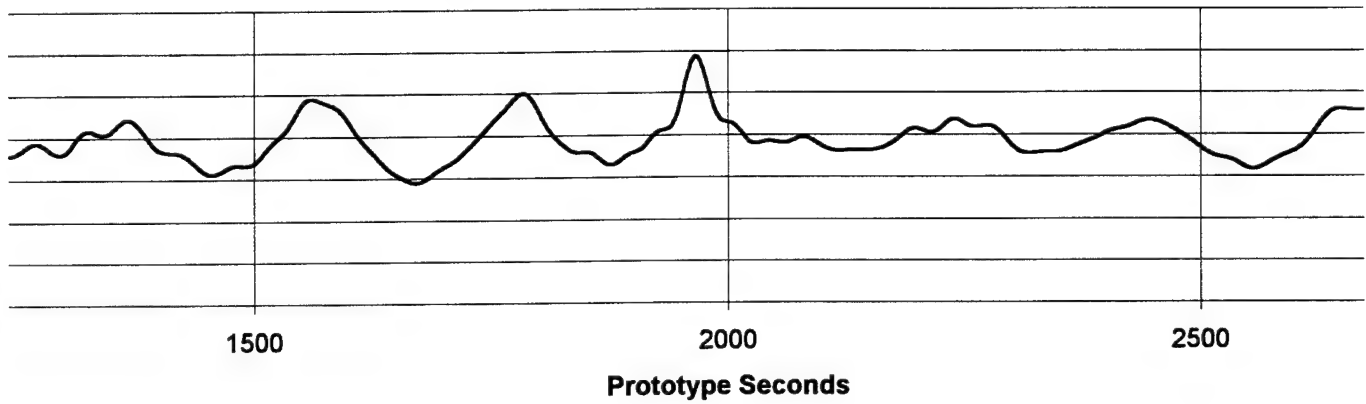
TEST A808 - ML_1 TENSION



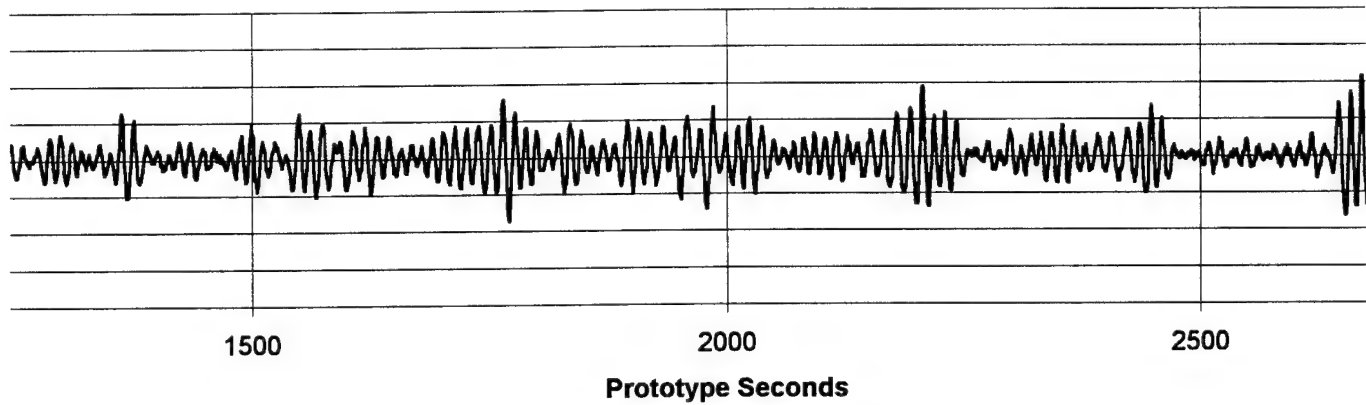
Unfiltered Time History



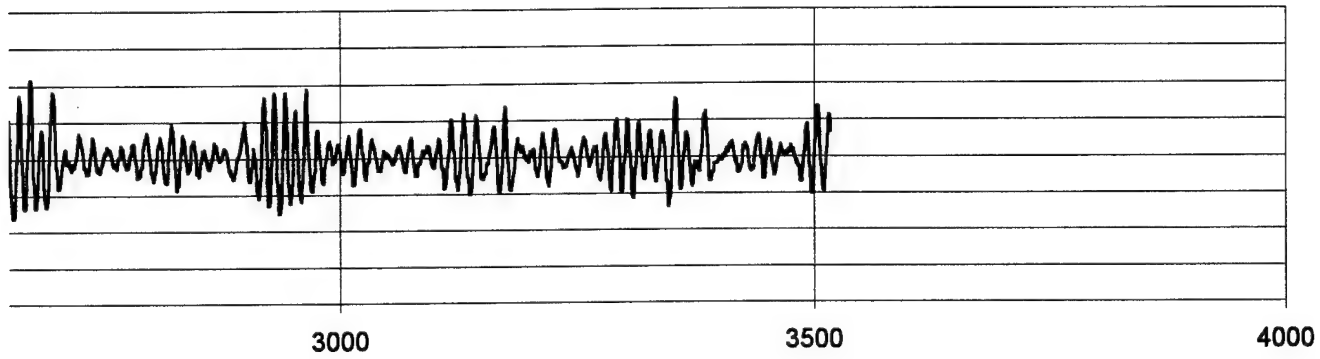
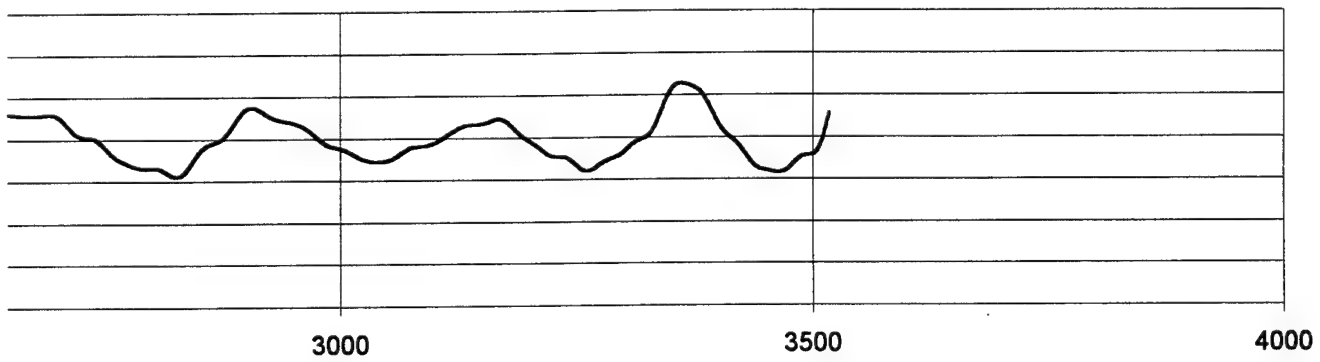
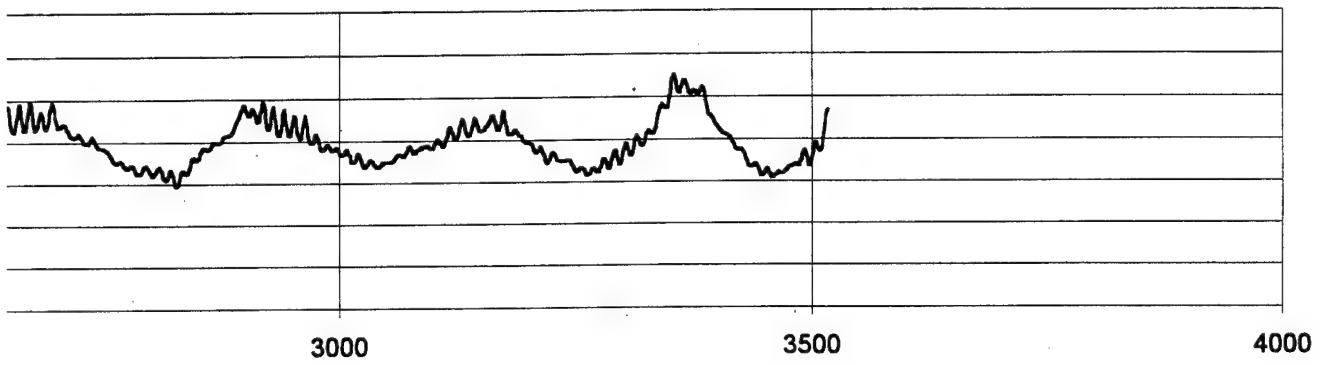
Filtered Low Frequency Time History



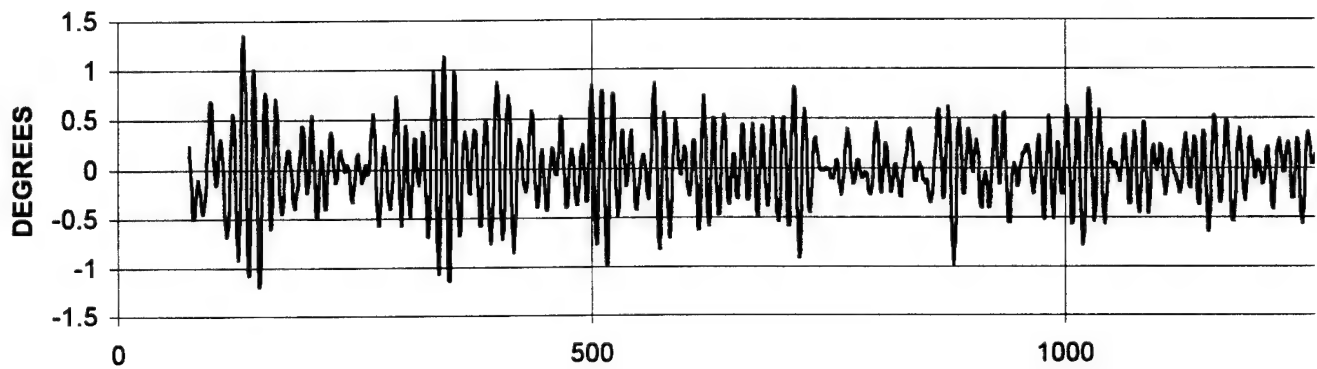
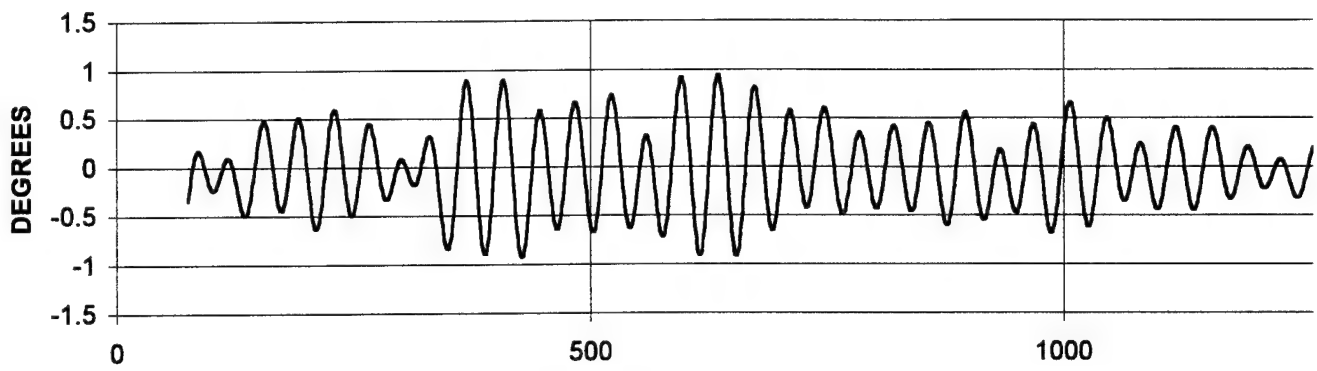
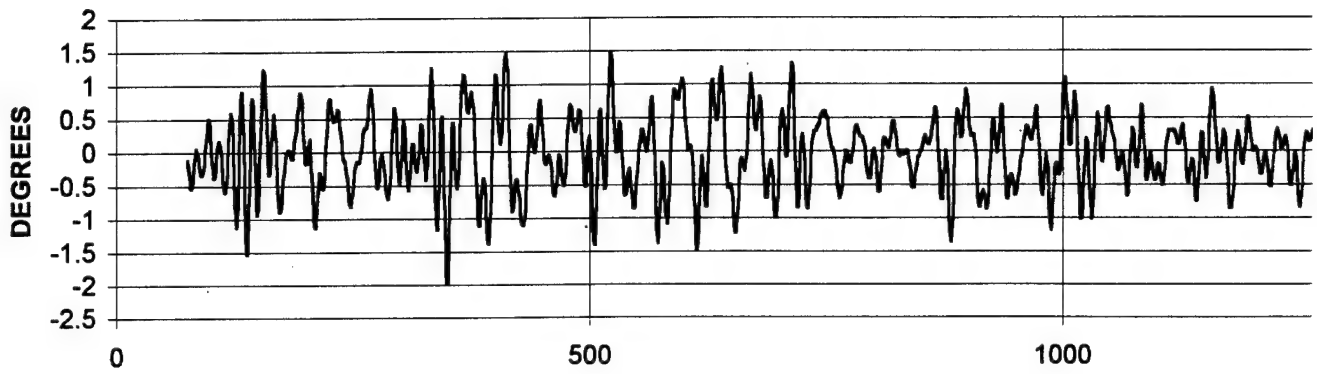
Filtered High Frequency Time History



TEST A808 - ML_1 TENSION

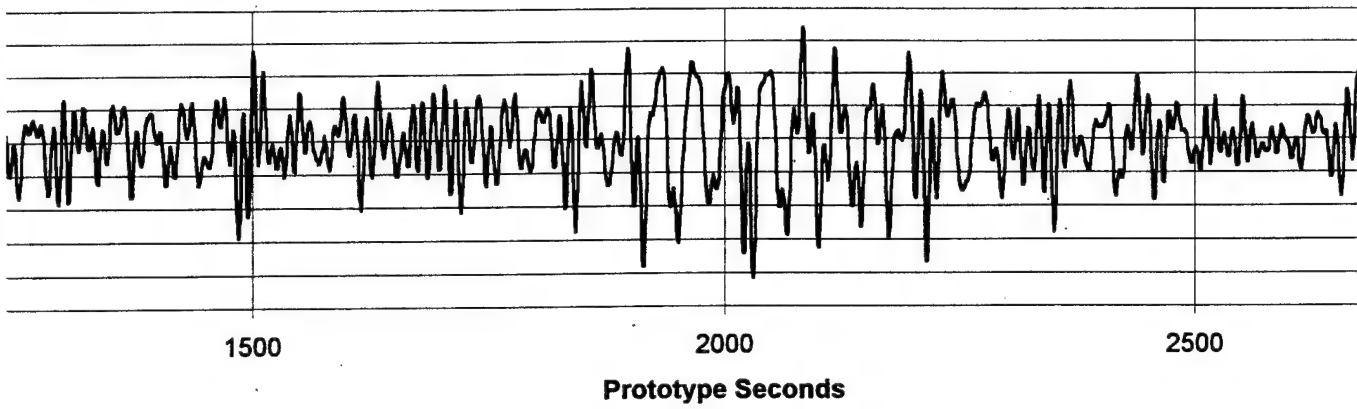


TEST A808 - PITCH

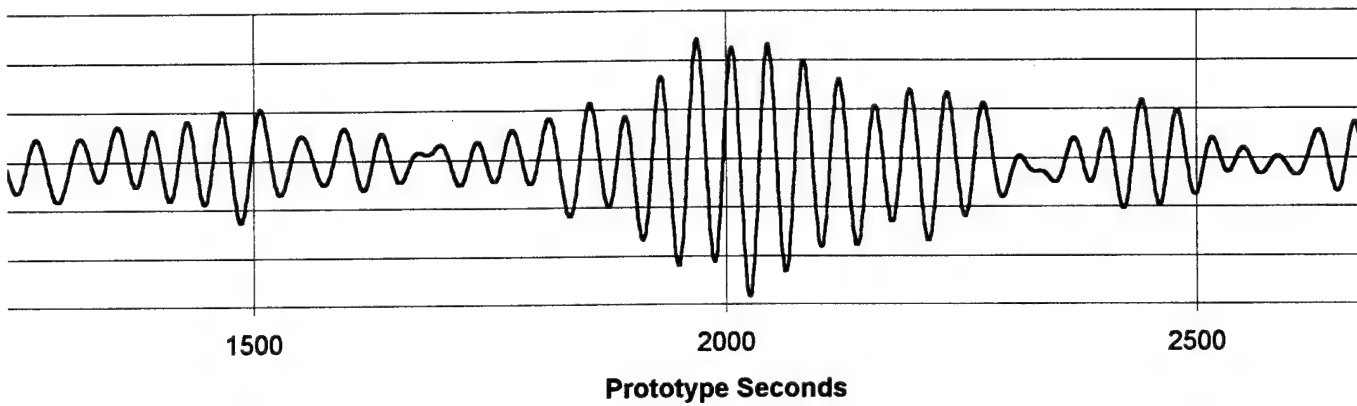


TEST A808 - PITCH

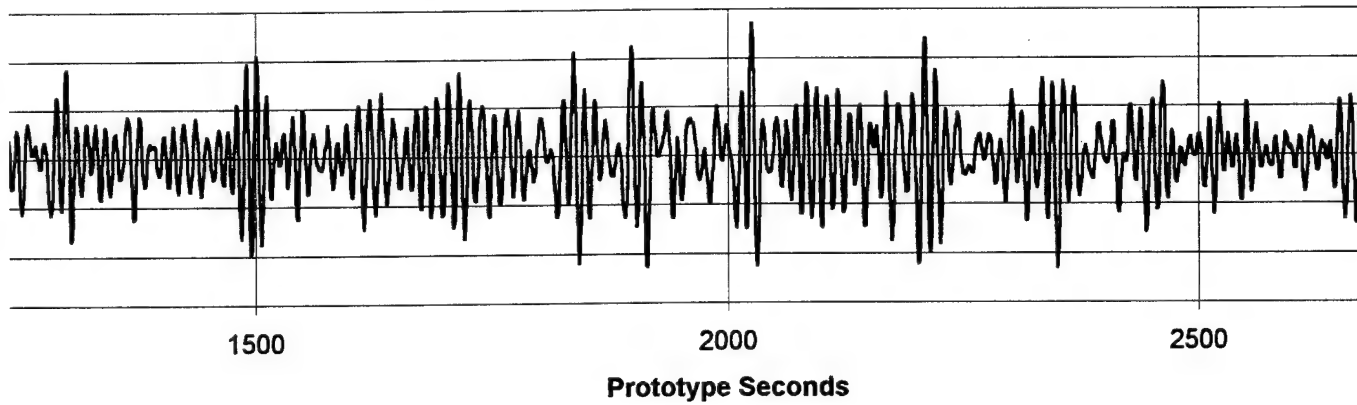
Unfiltered Time History



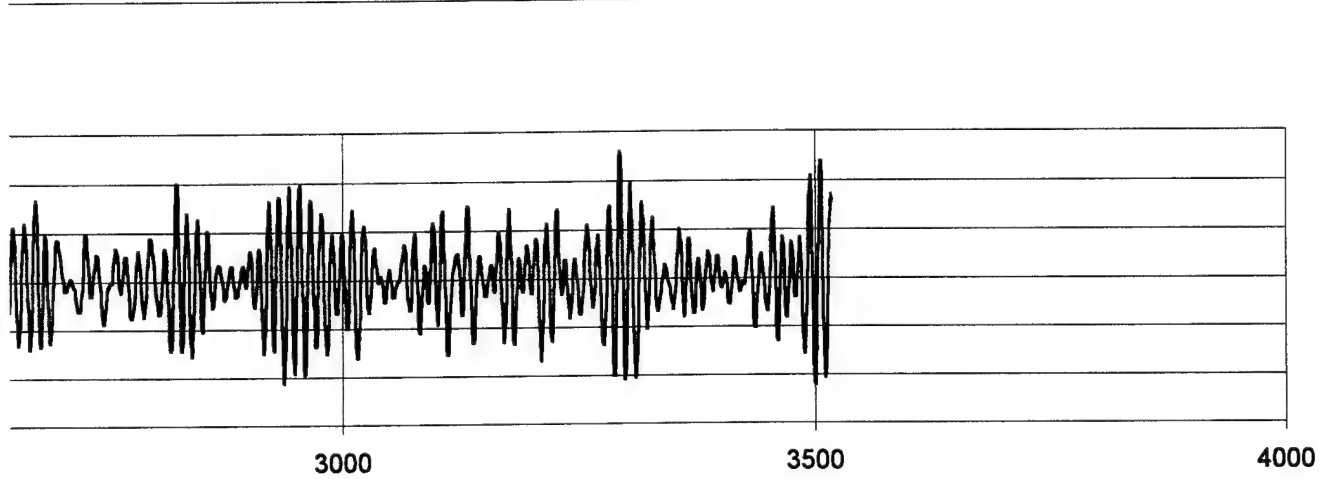
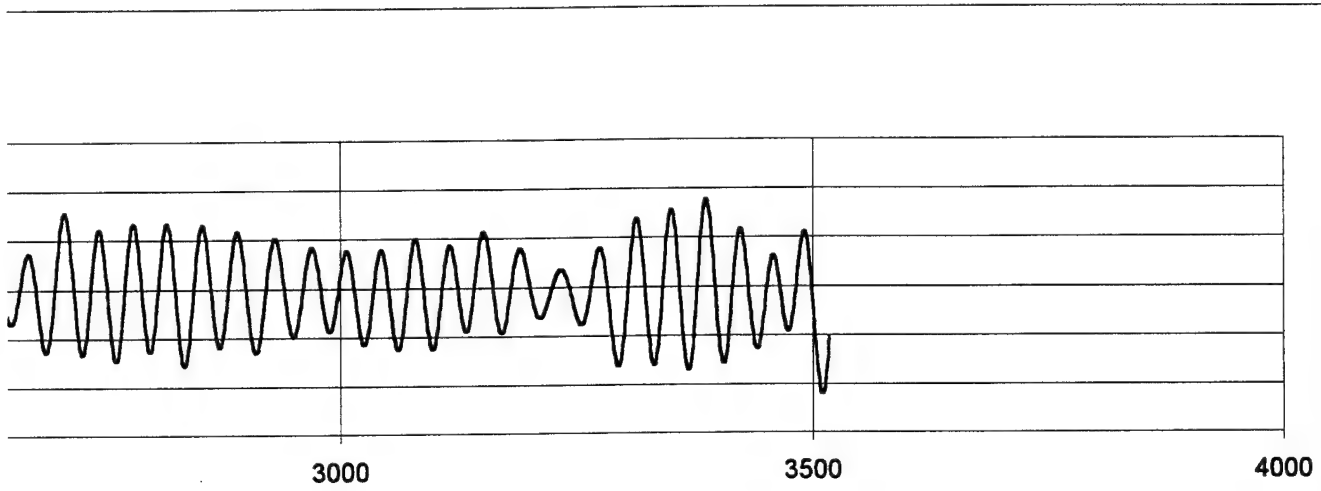
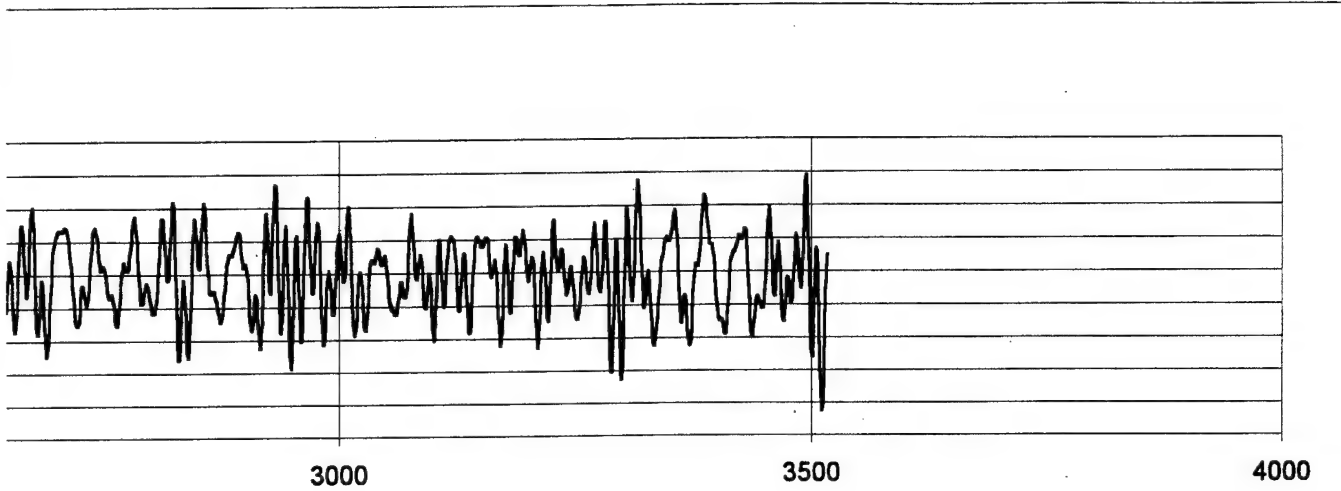
Filtered Low Frequency Time History



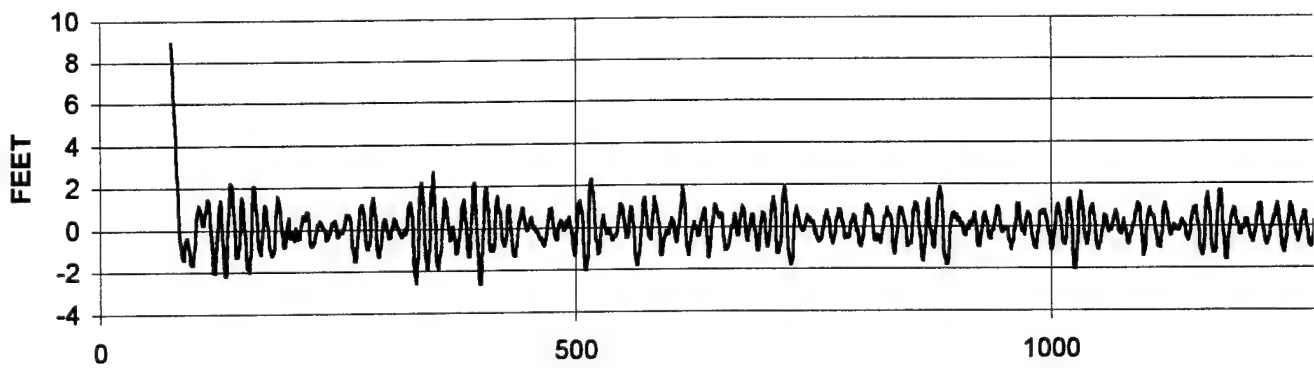
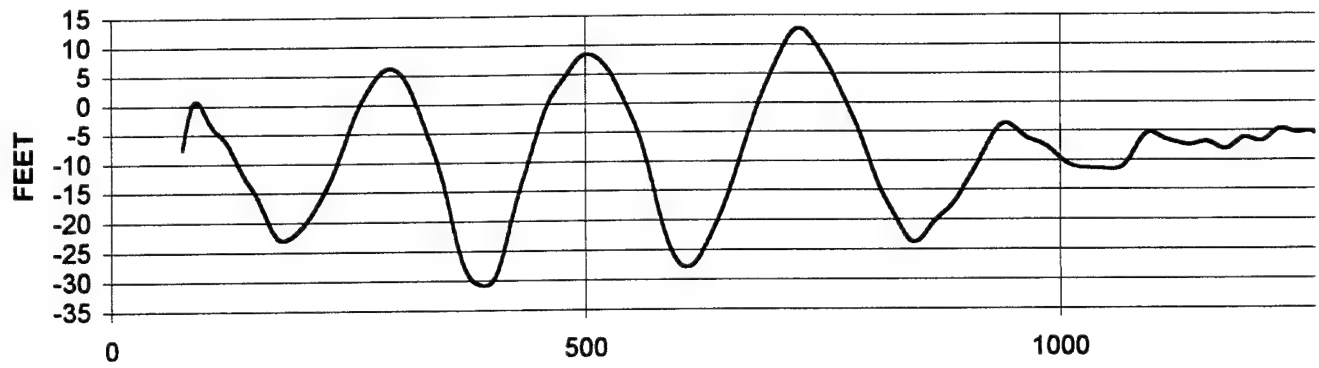
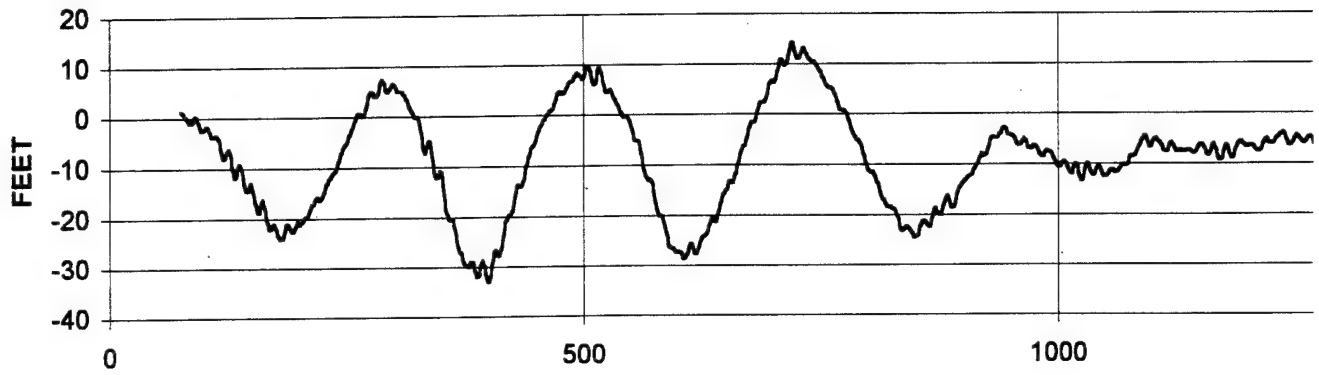
Filtered High Frequency Time History



TEST A808 - PITCH

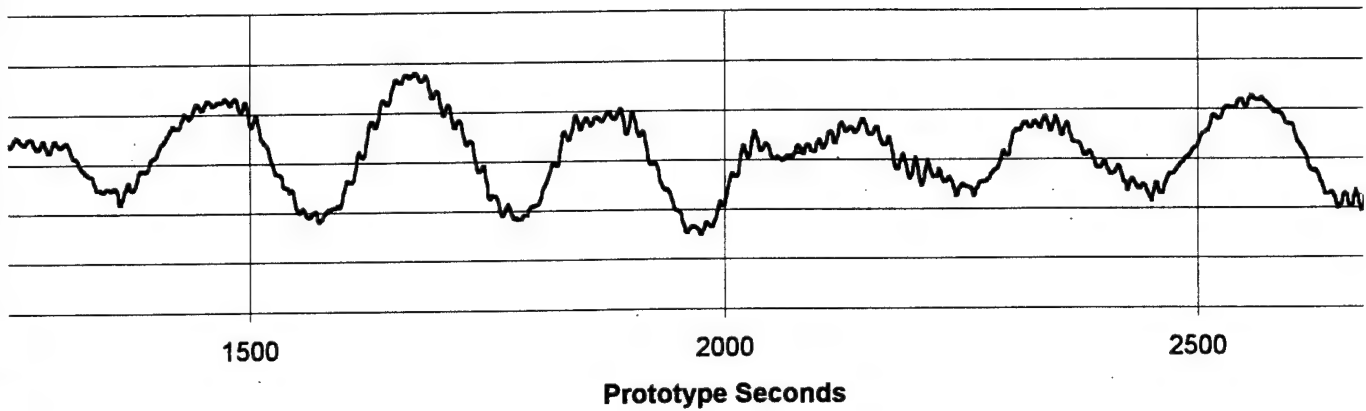


TEST A808 - PT SURGE

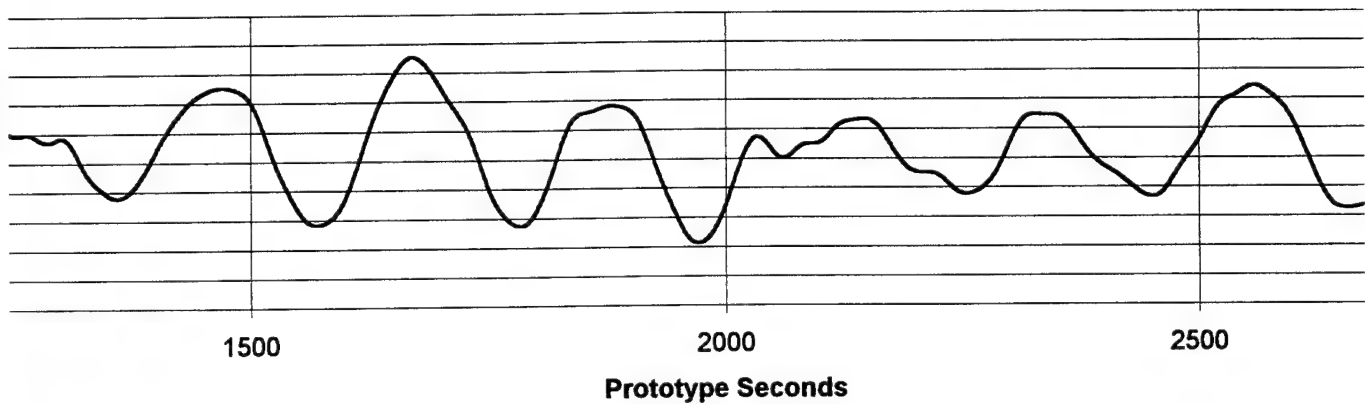


TEST A808 - PT SURGE

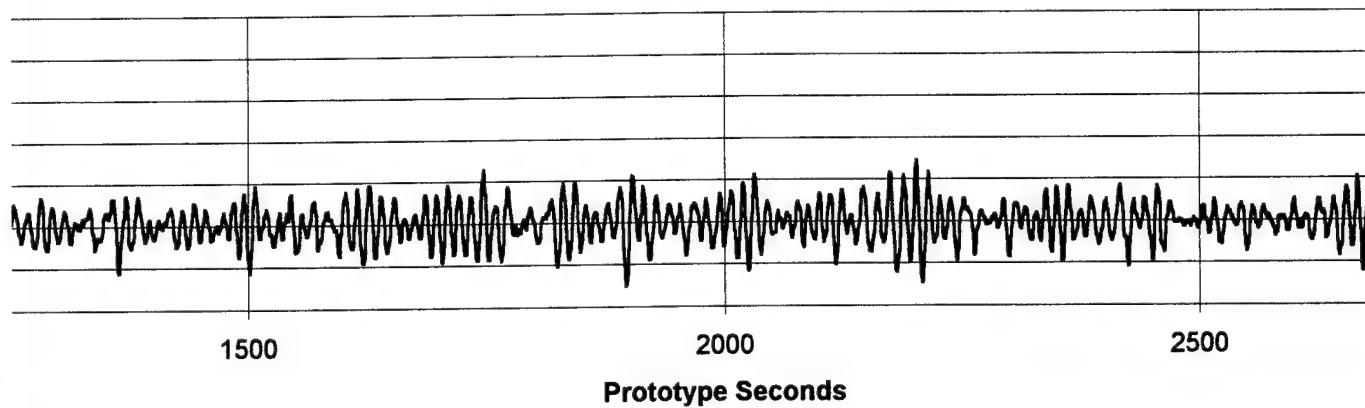
Unfiltered Time History



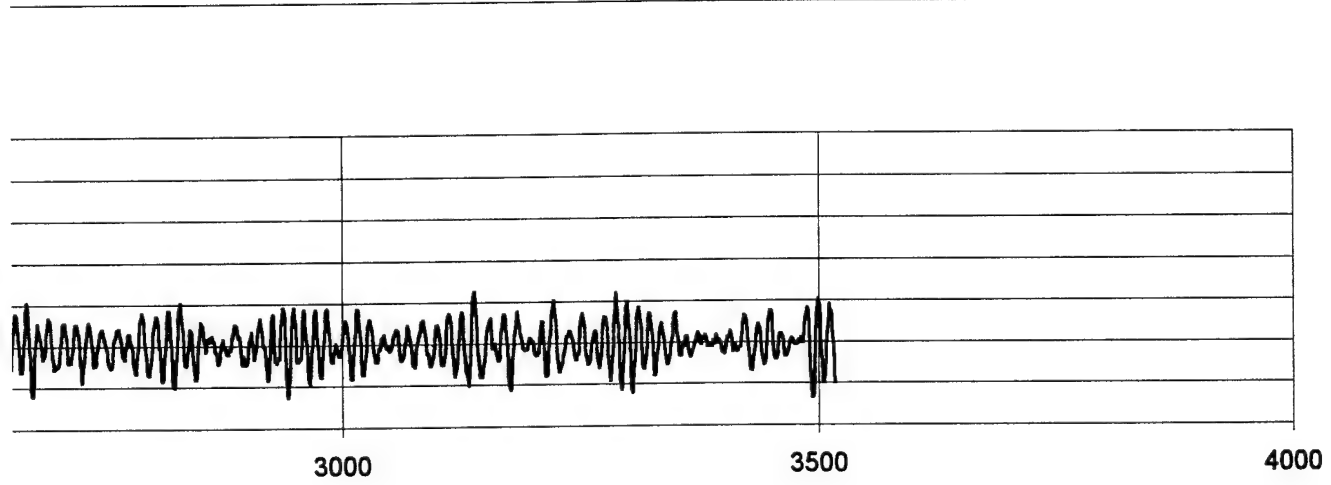
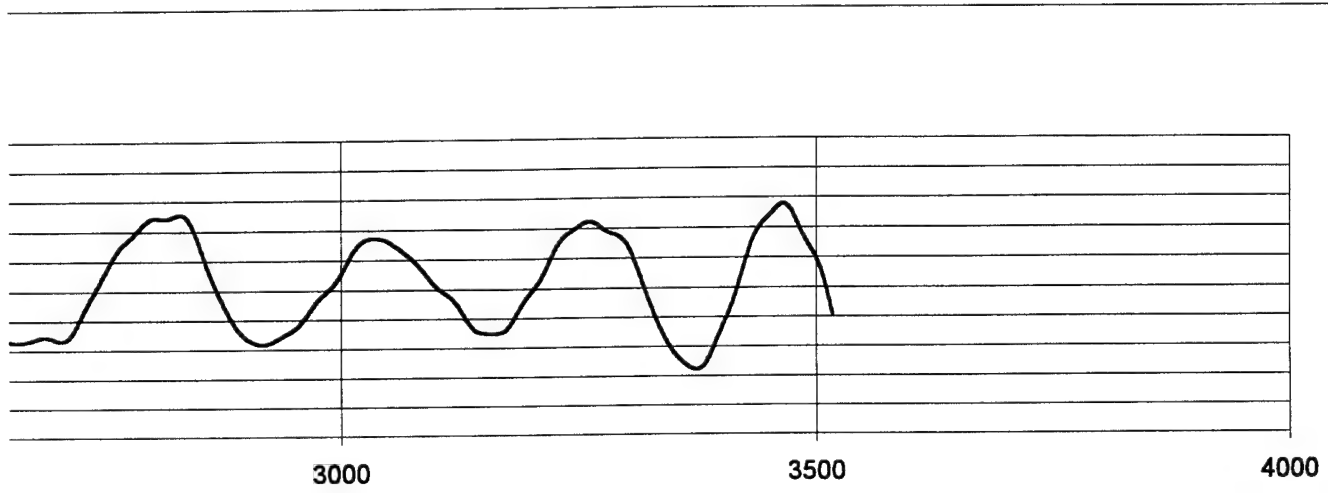
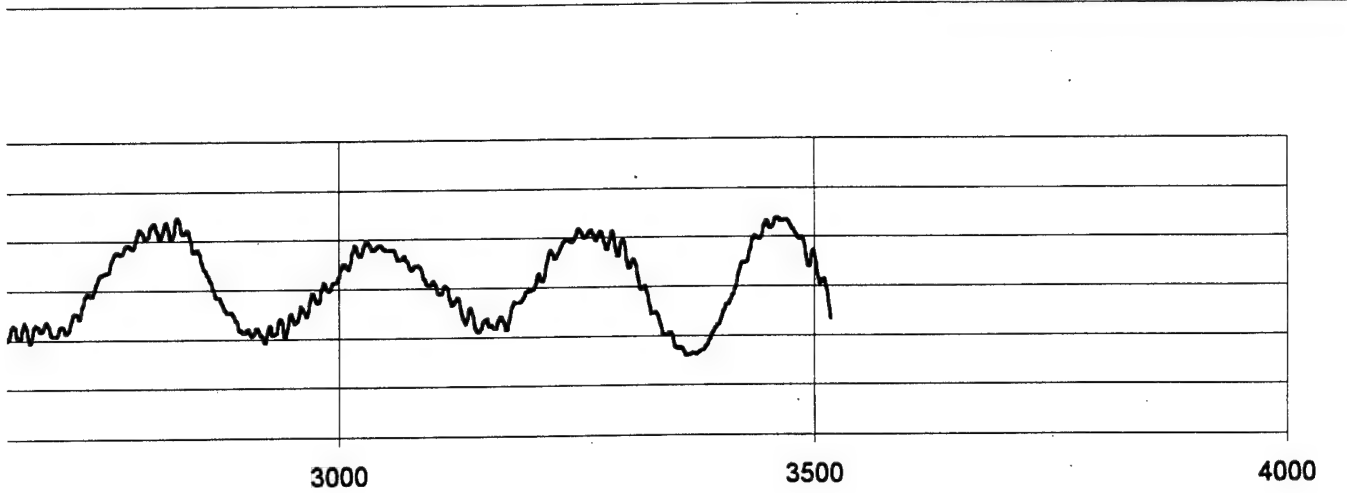
Filtered Low Frequency Time History



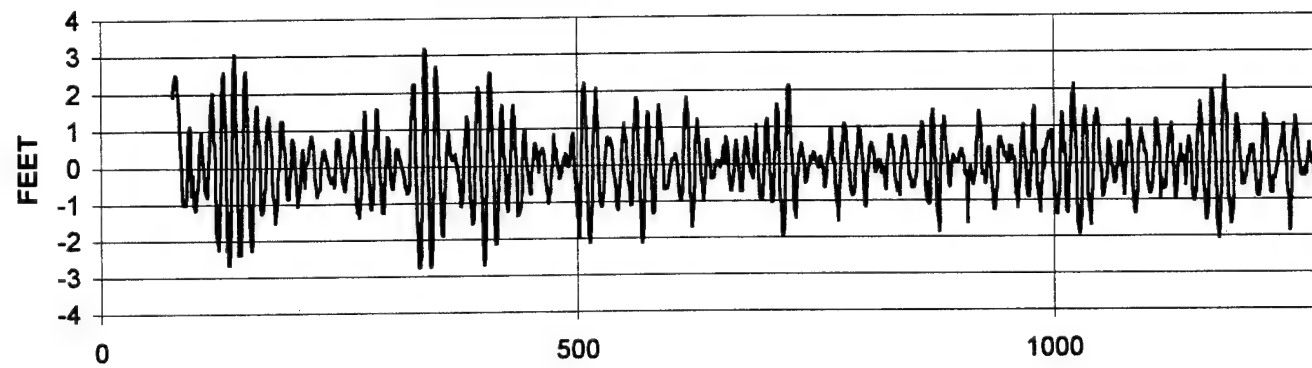
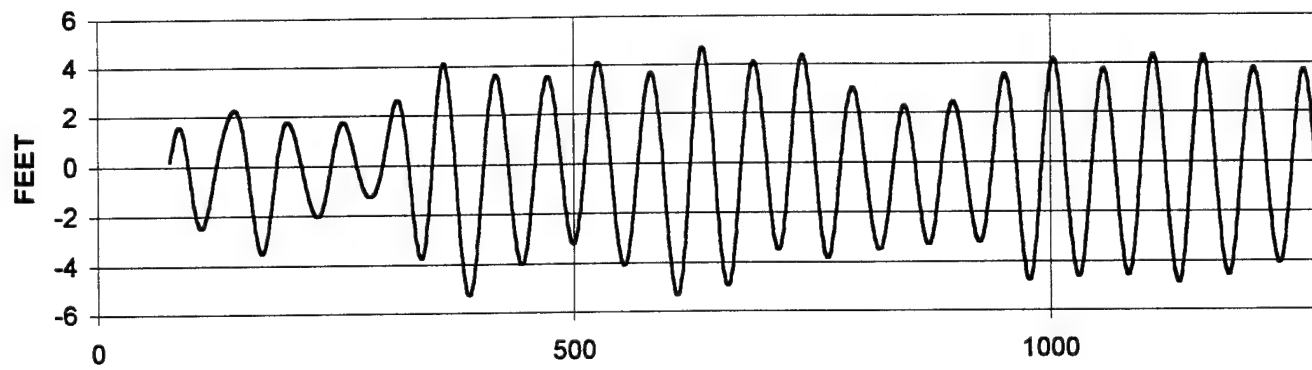
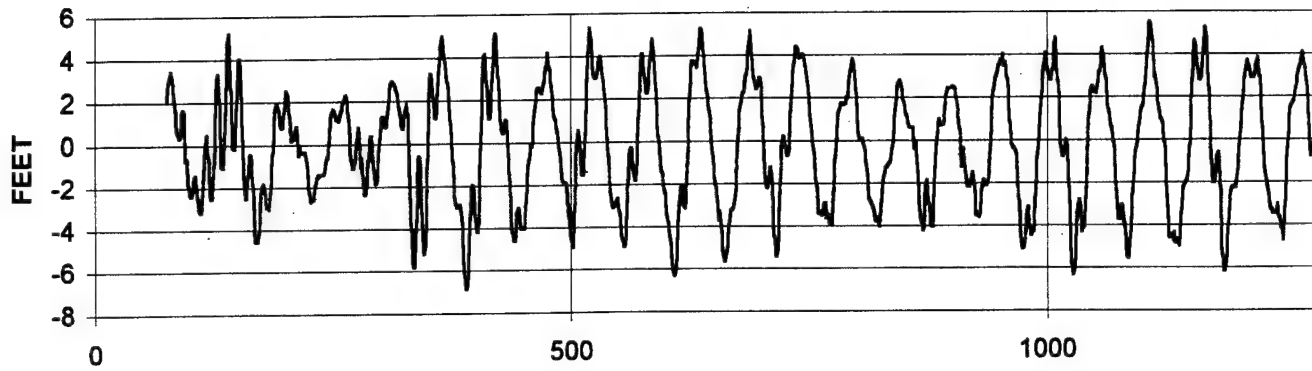
Filtered High Frequency Time History



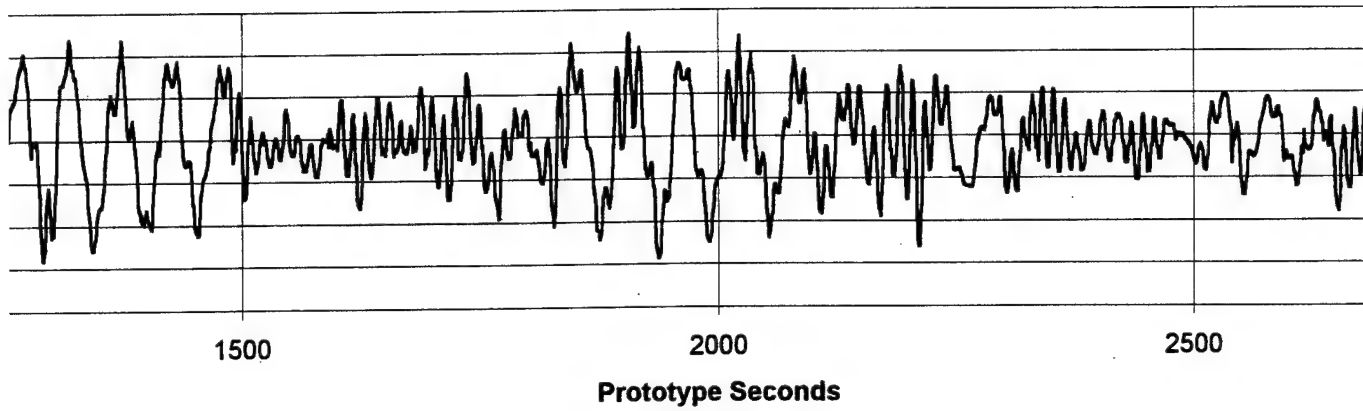
TEST A808 - PT SURGE



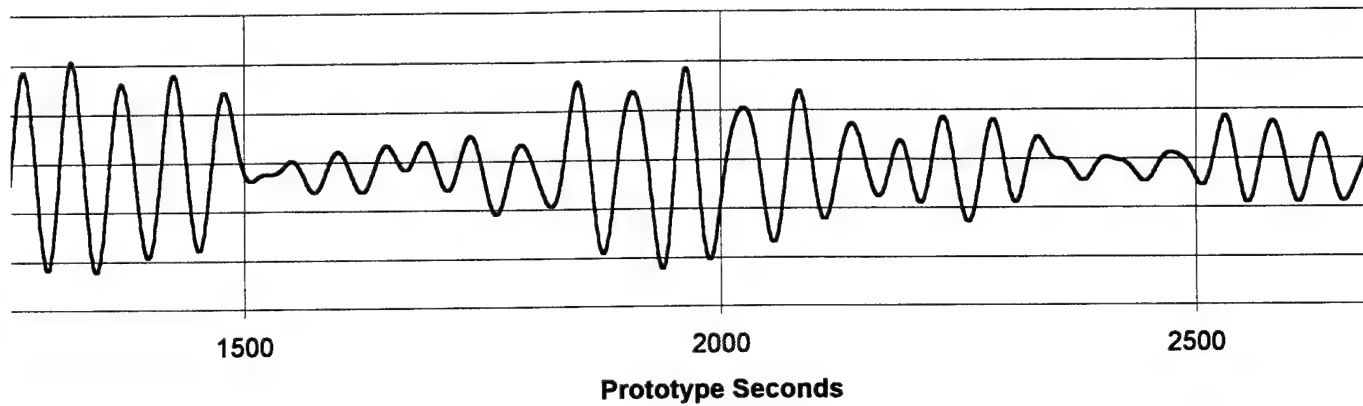
TEST A808 - PT HEAVE



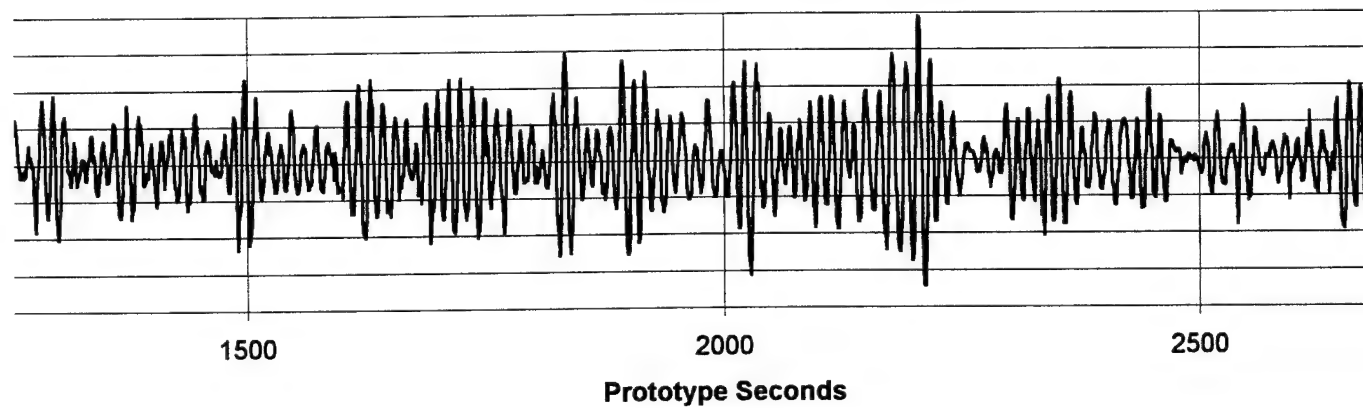
Unfiltered Time History



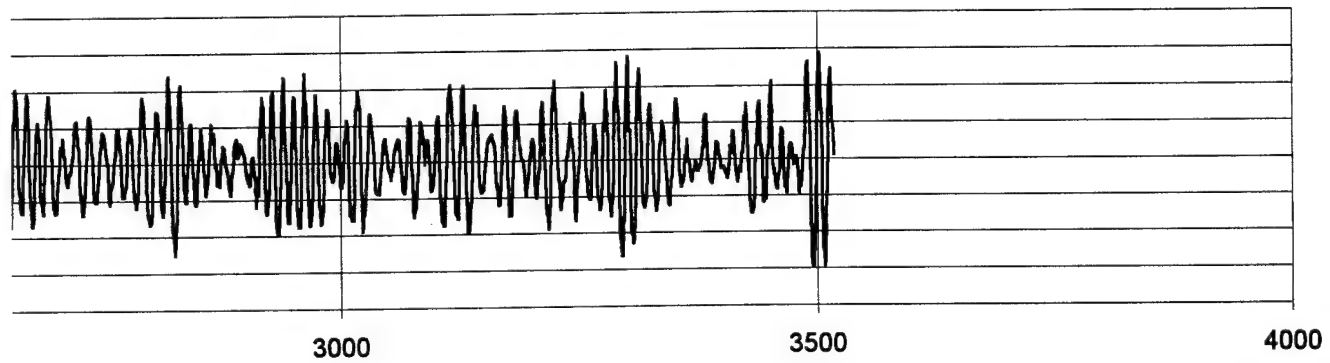
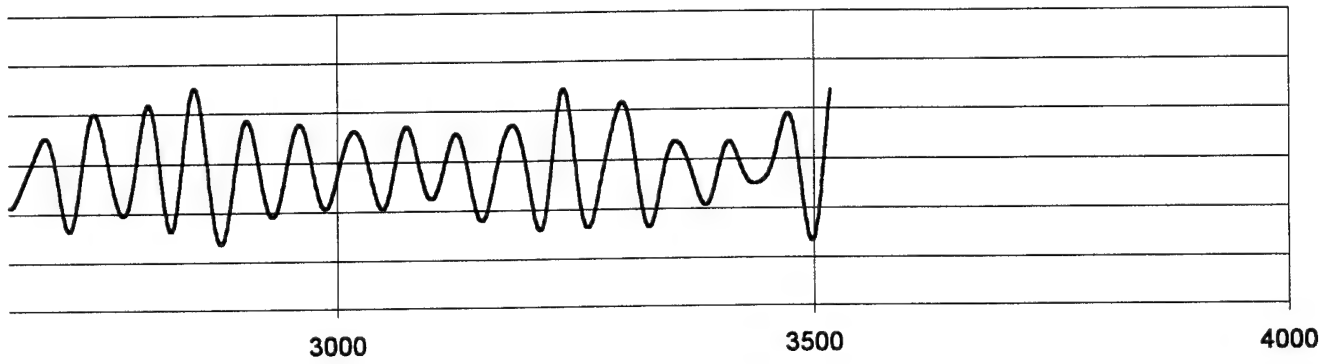
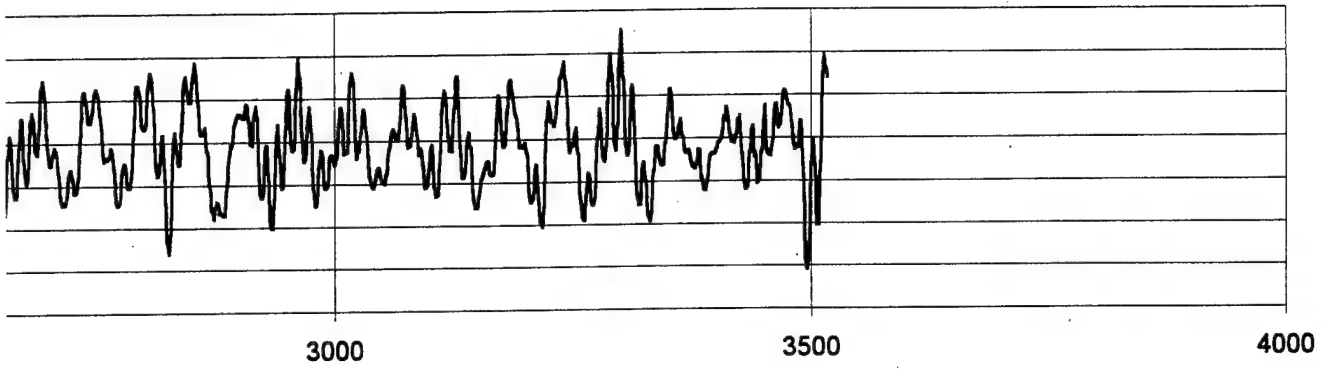
Filtered Low Frequency Time History



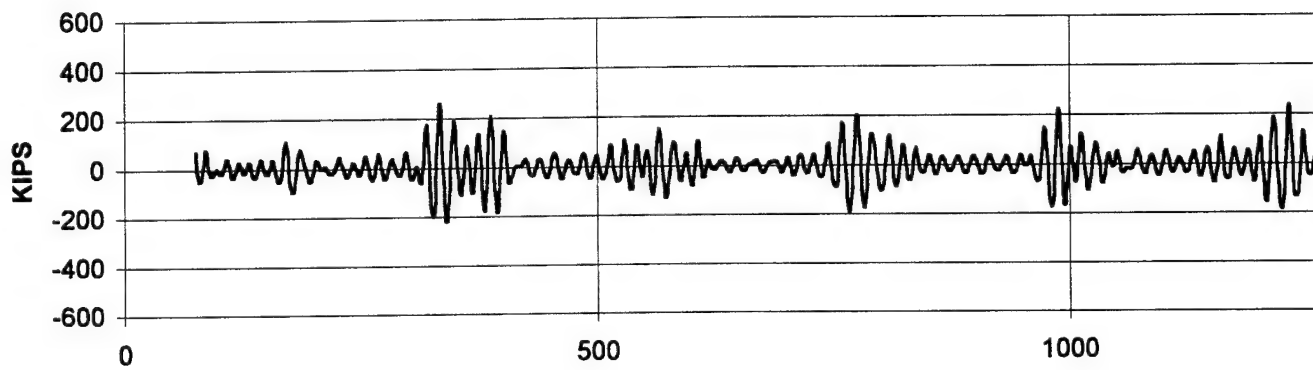
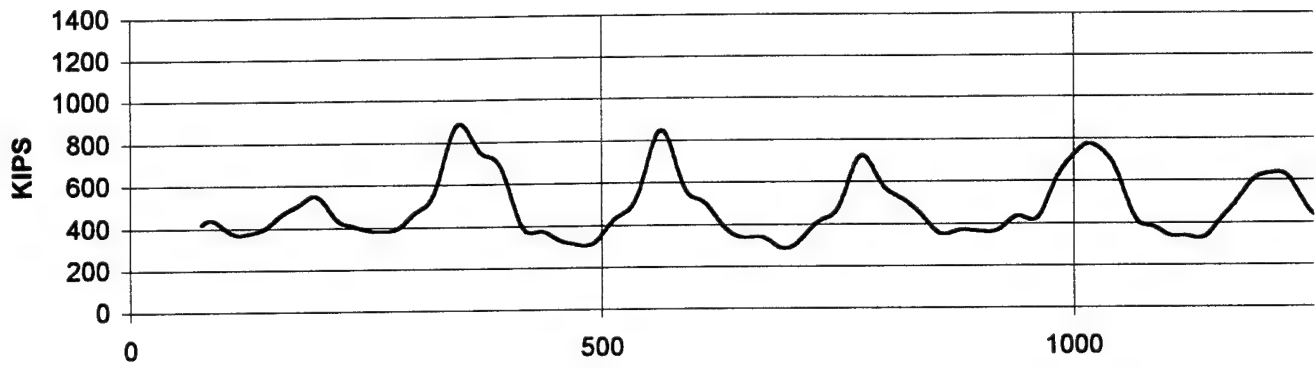
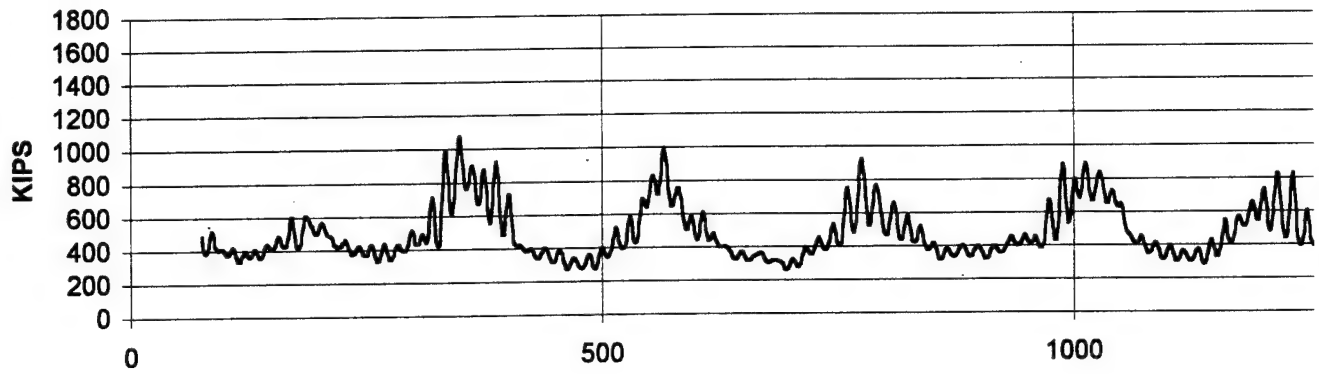
Filtered High Frequency Time History



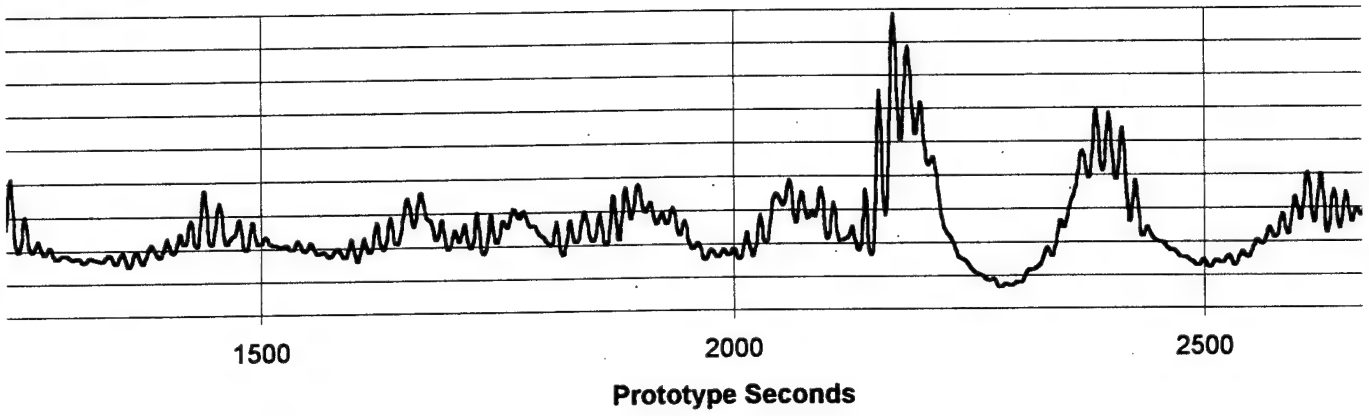
TEST A808 - PT HEAVE



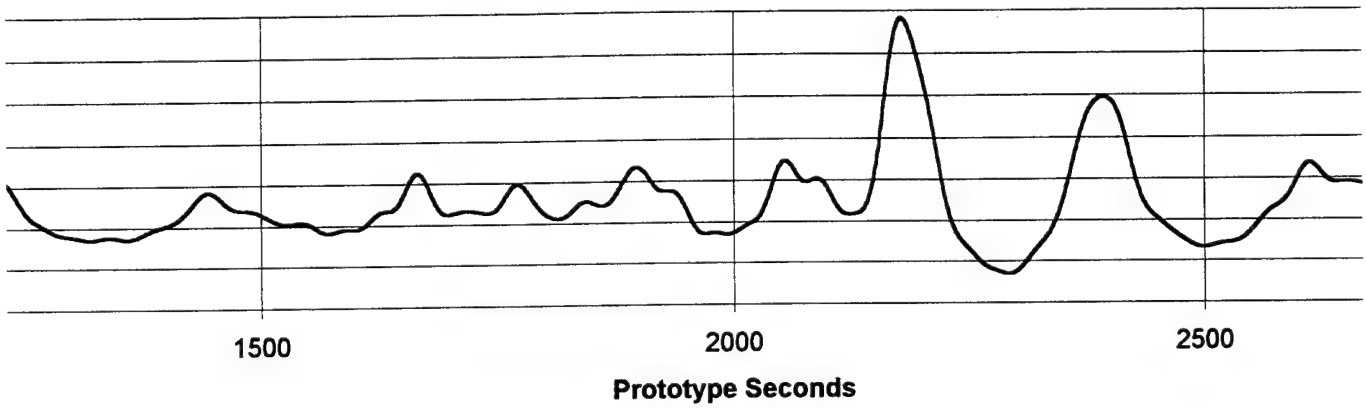
TEST A809 - ML_1 TENSION



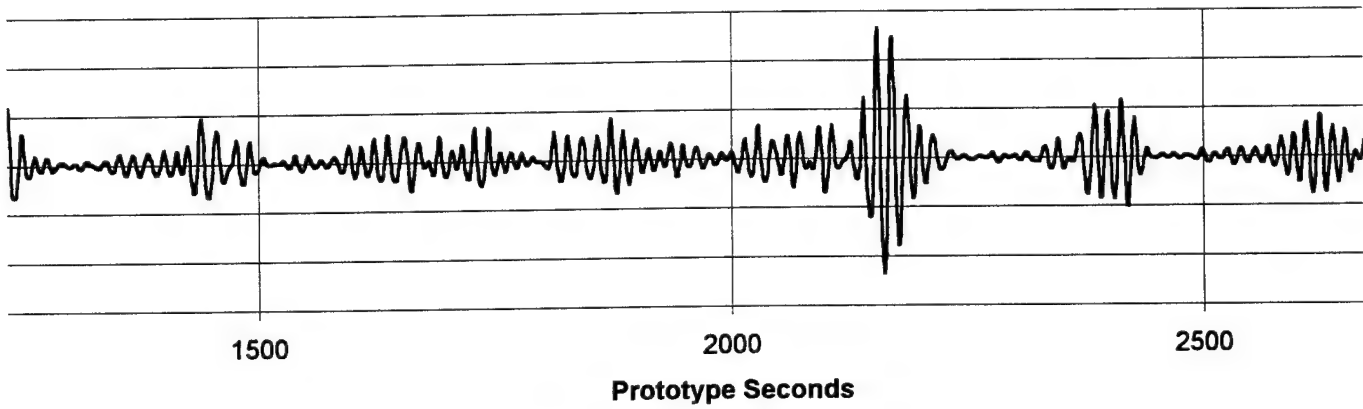
Unfiltered Time History



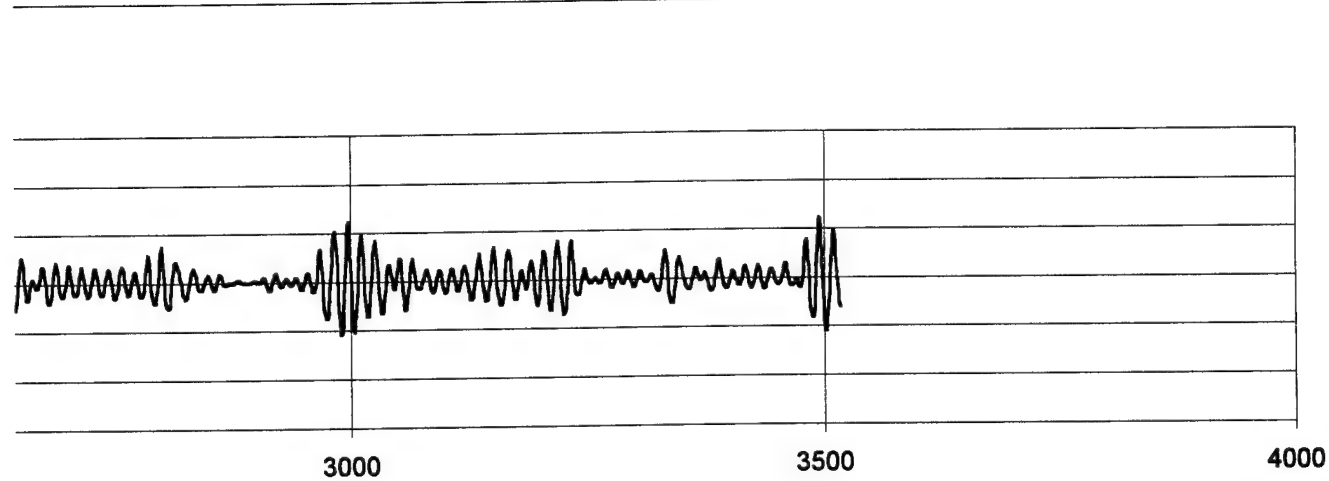
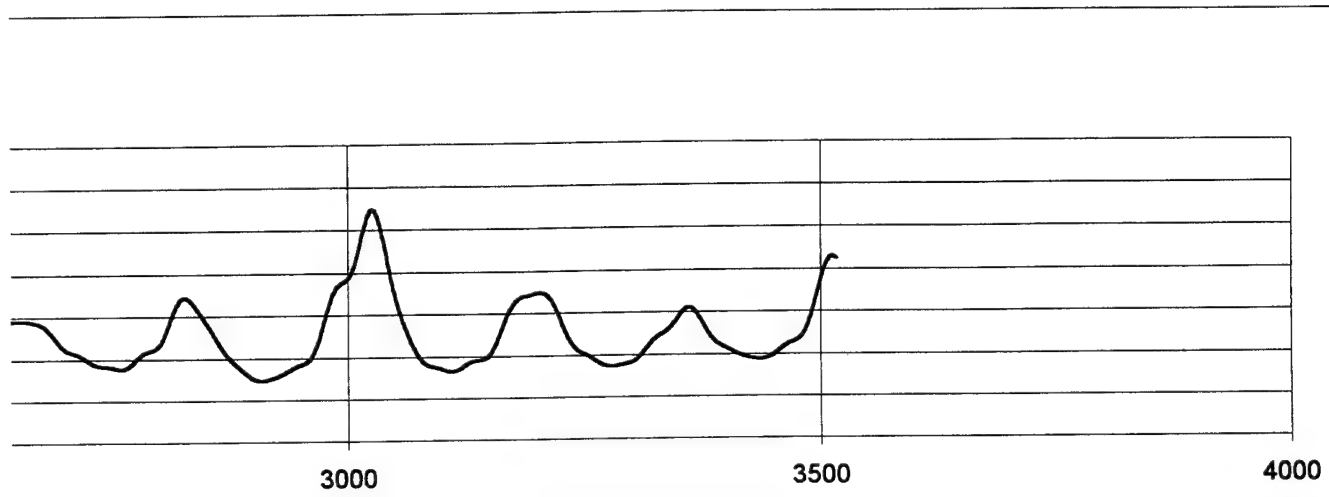
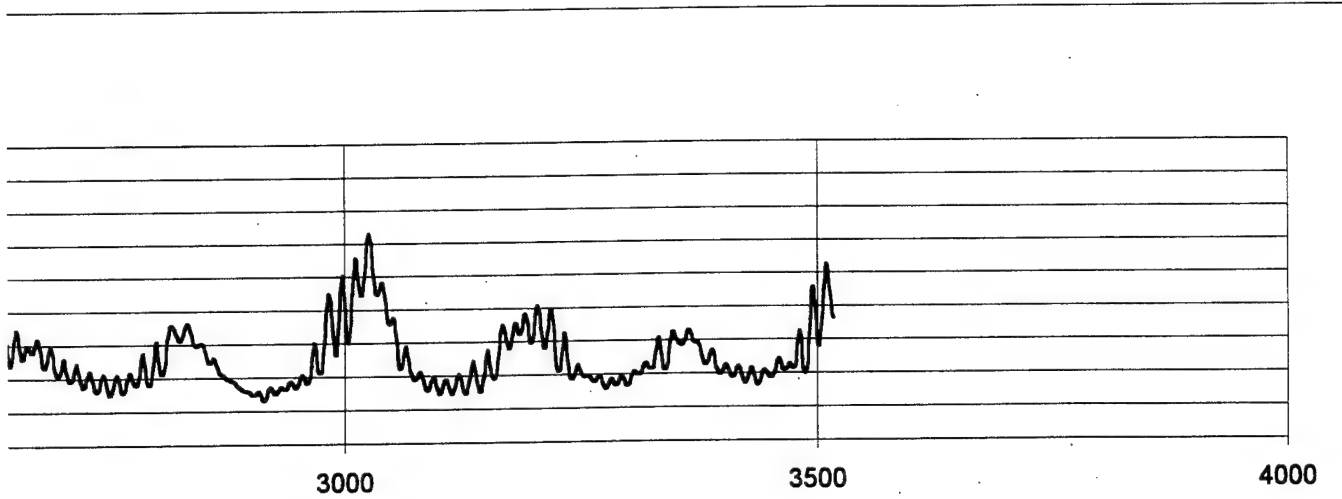
Filtered Low Frequency Time History



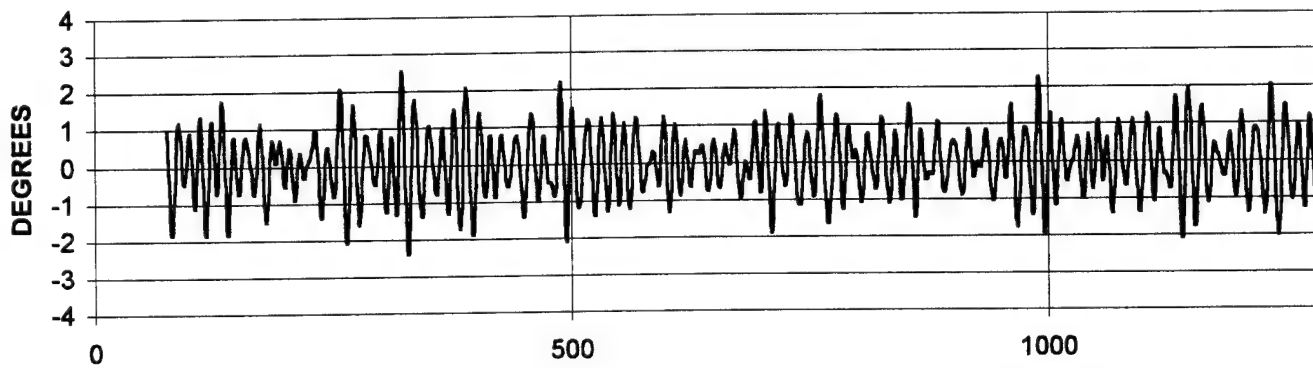
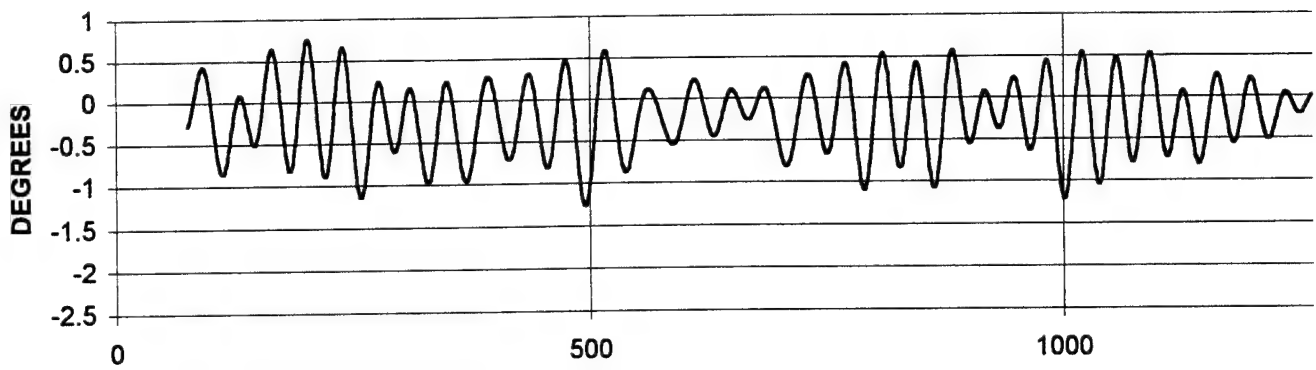
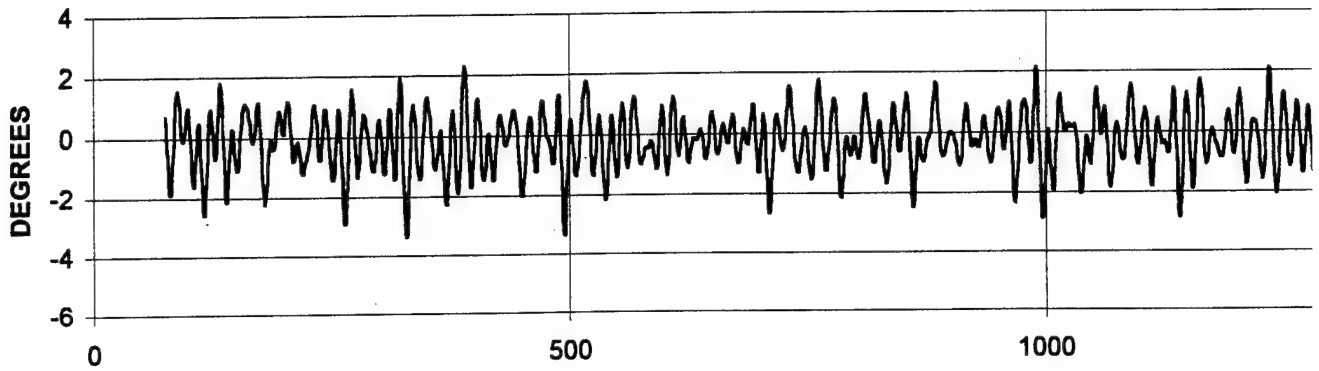
Filtered High Frequency Time History



TEST A809 - ML_1 TENSION

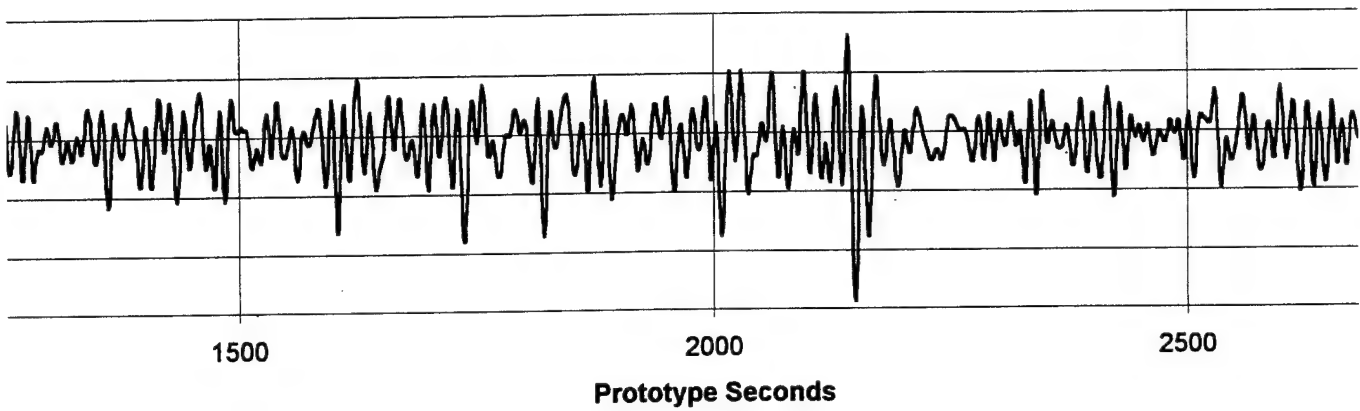


TEST A809 - PITCH

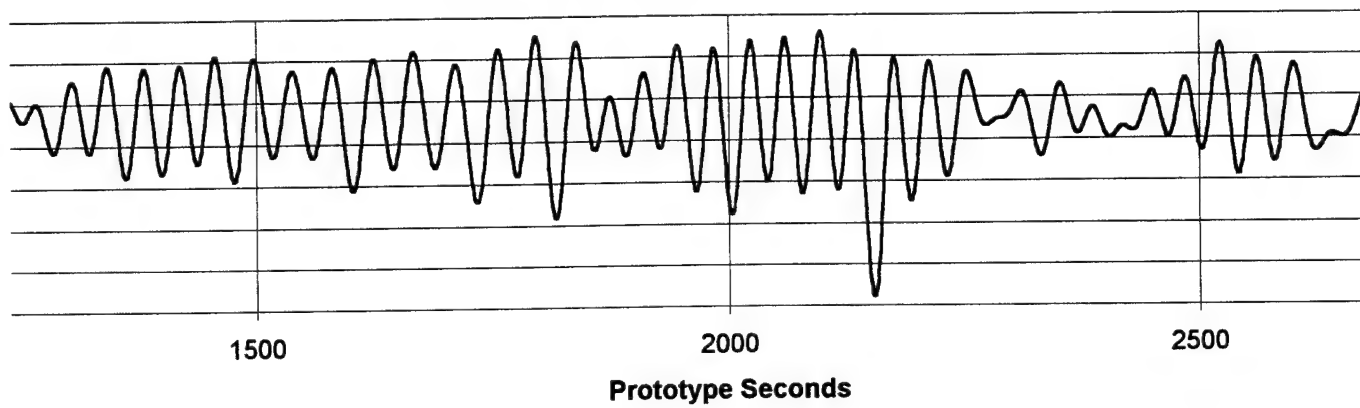


TEST A809 - PITCH

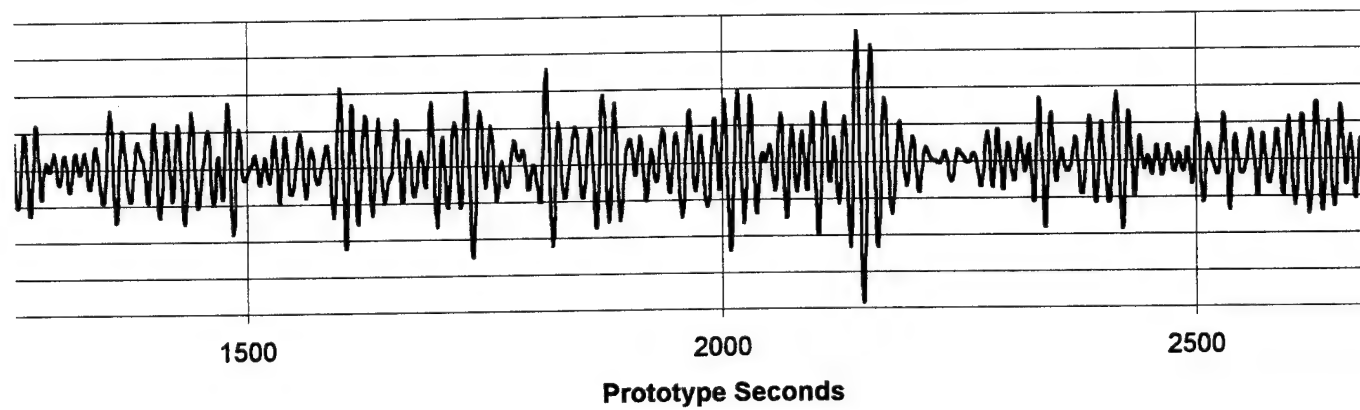
Unfiltered Time History



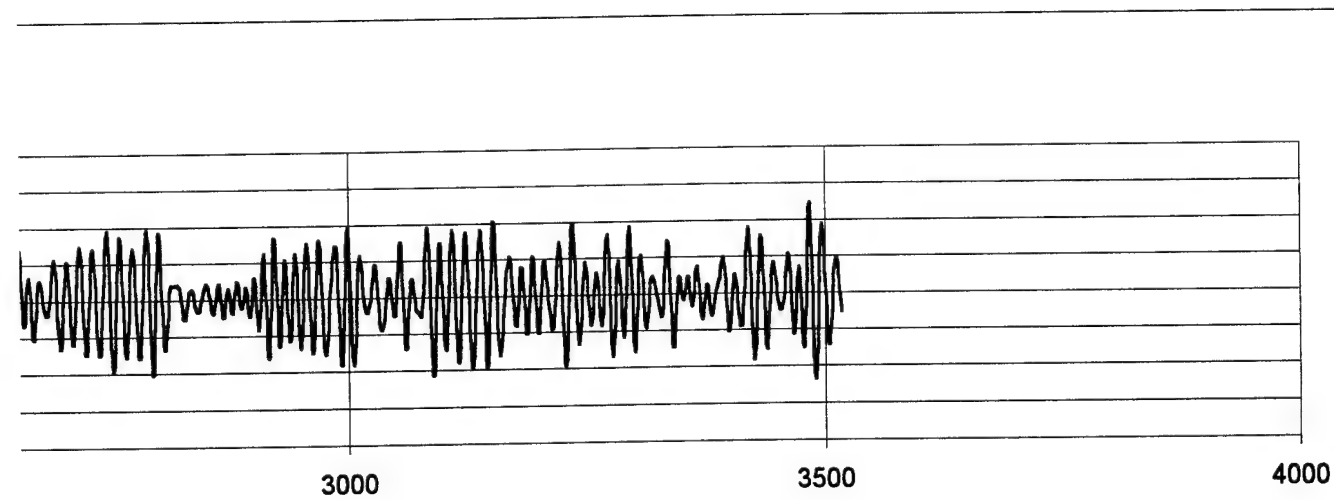
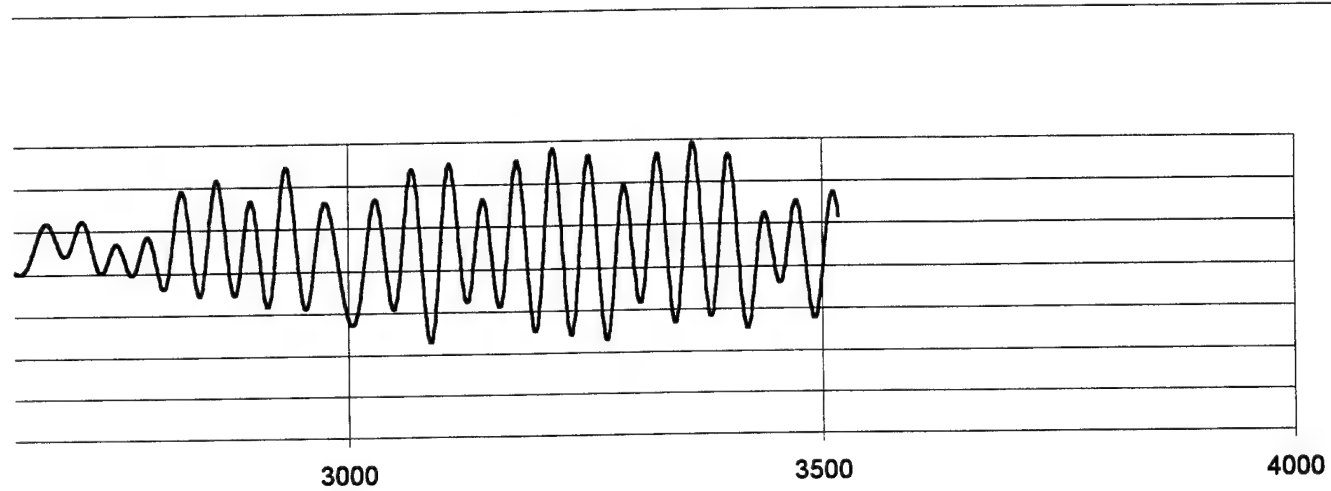
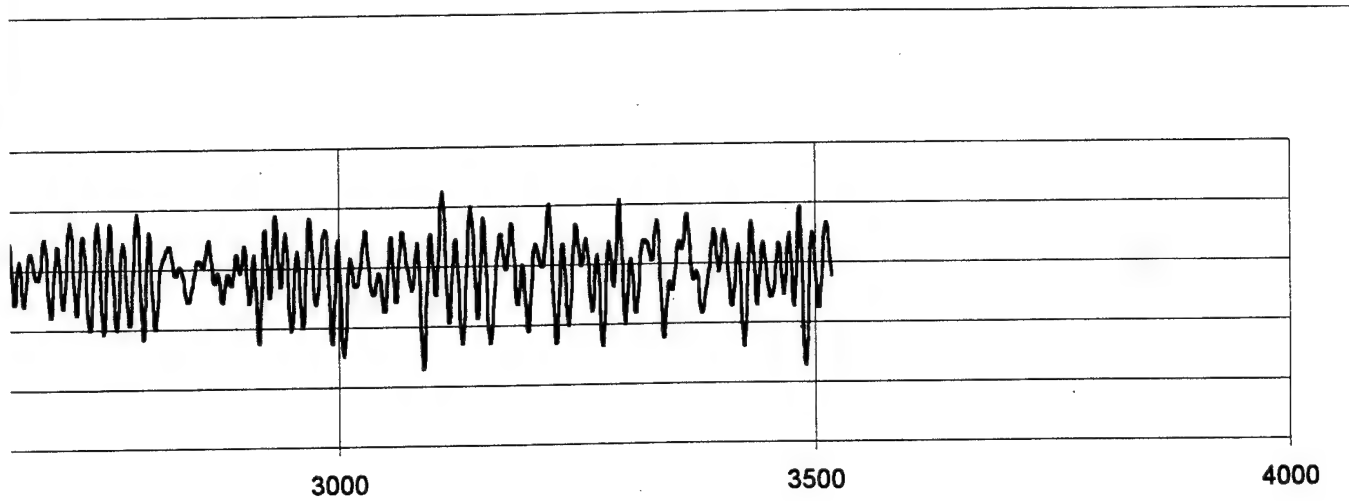
Filtered Low Frequency Time History



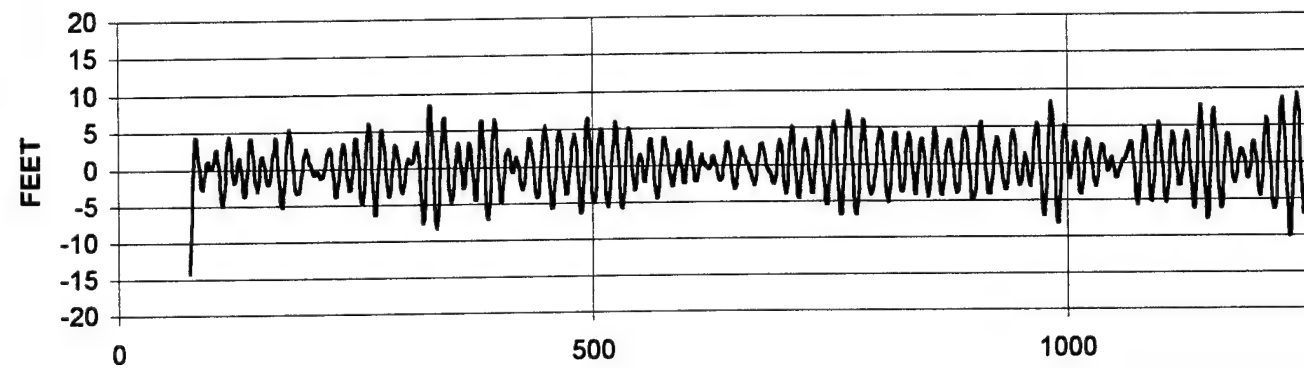
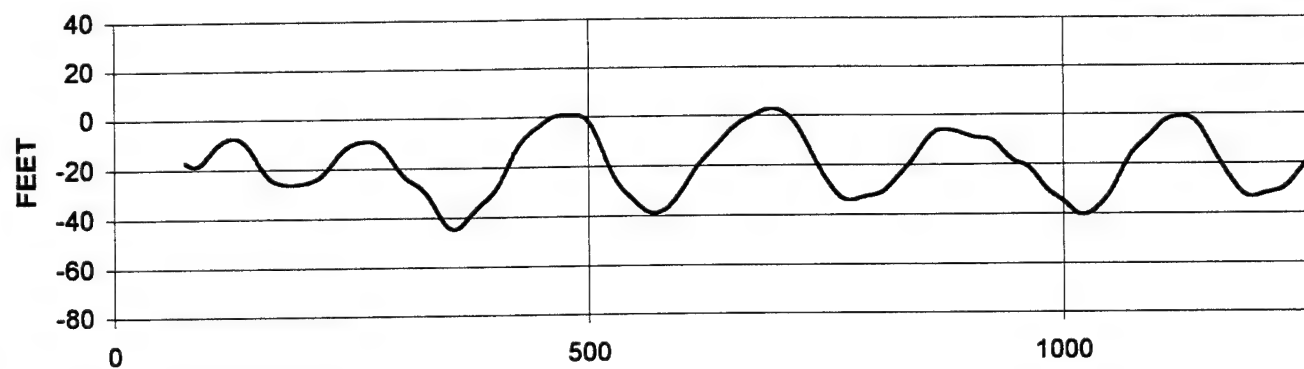
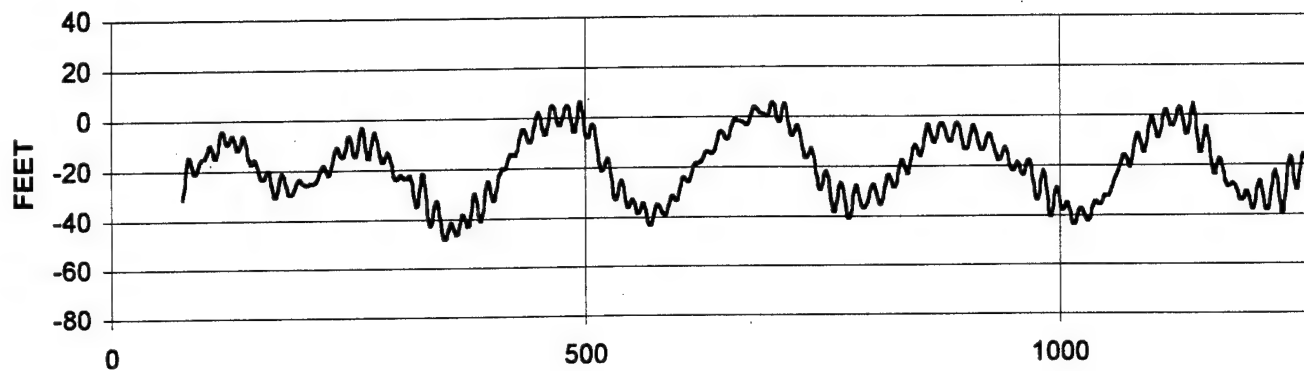
Filtered High Frequency Time History



TEST A809 - PITCH

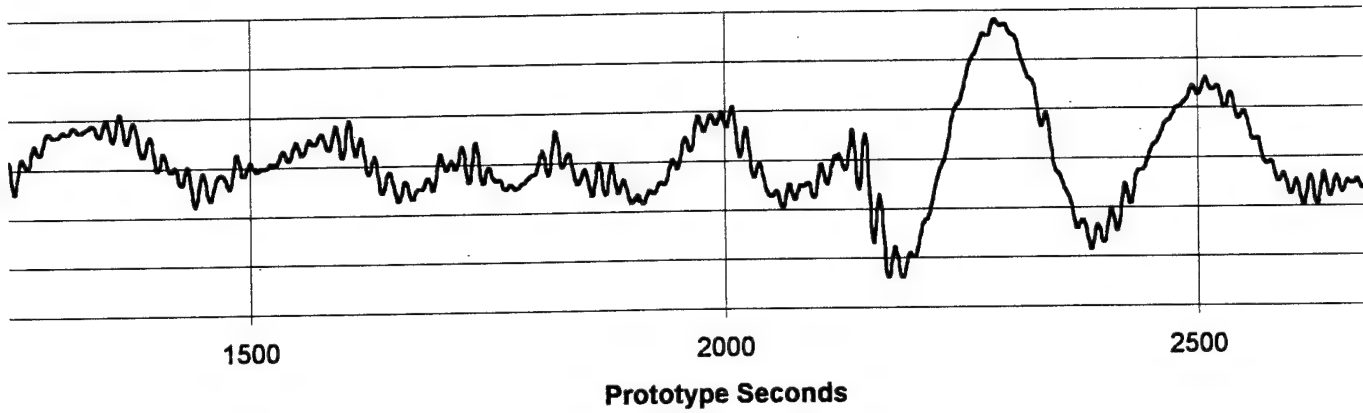


TEST A809 - PT SURGE

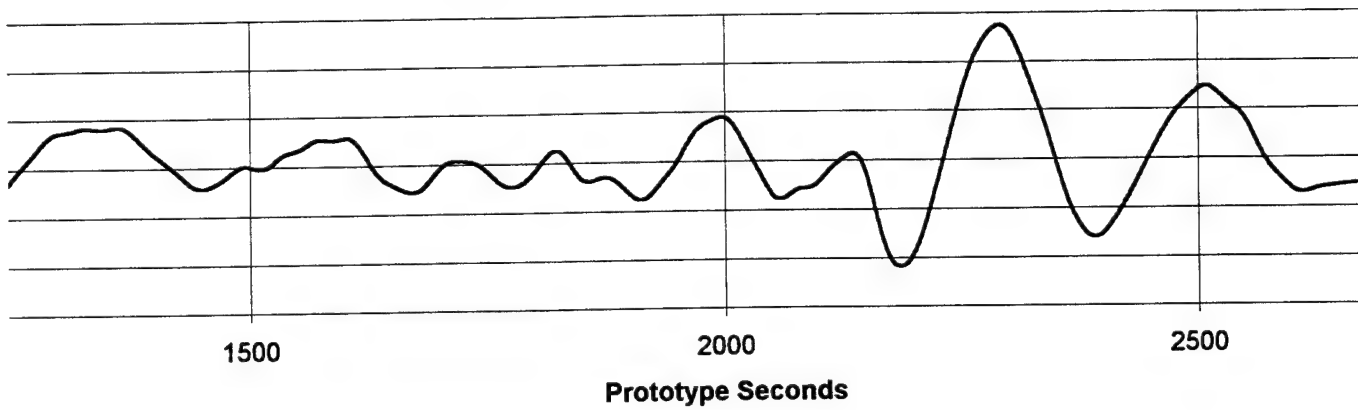


TEST A809 - PT SURGE

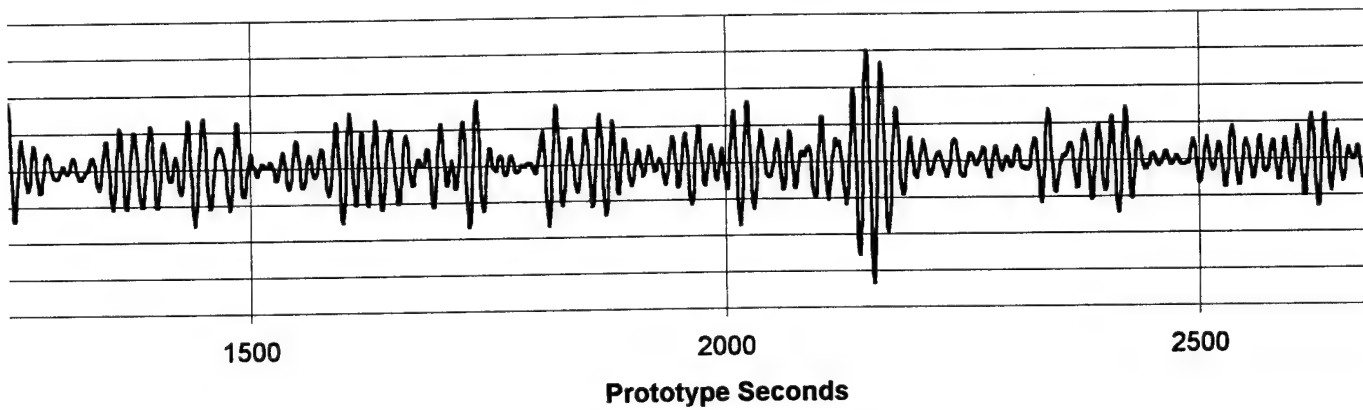
Unfiltered Time History



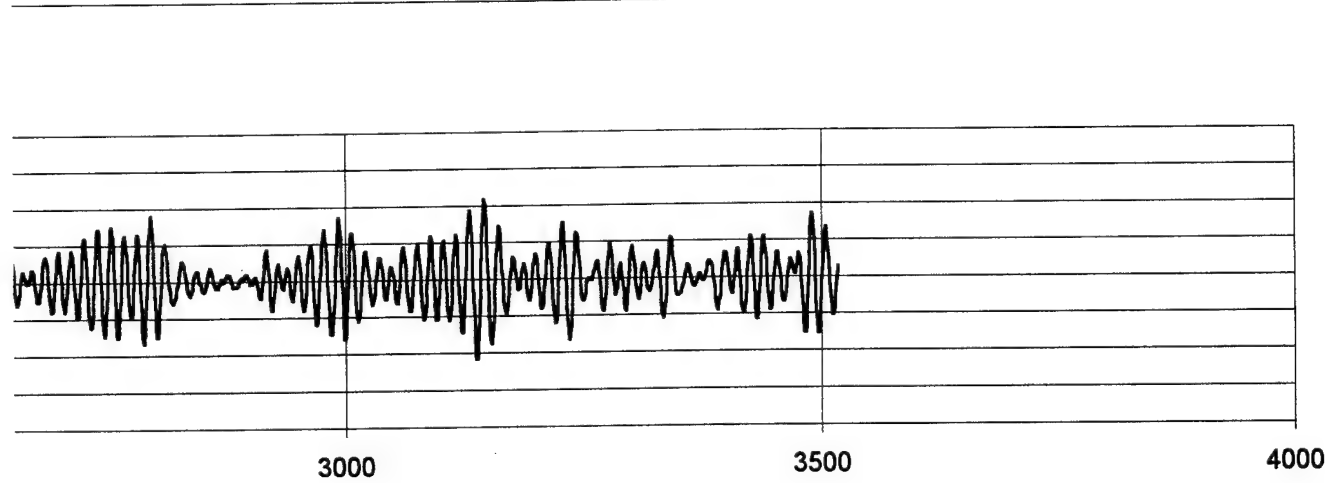
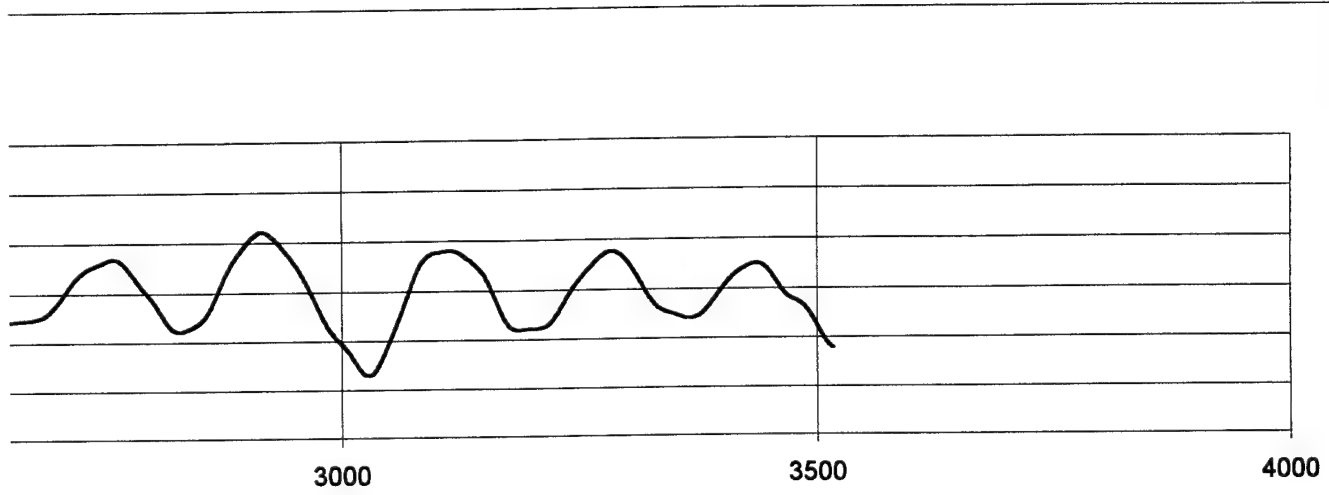
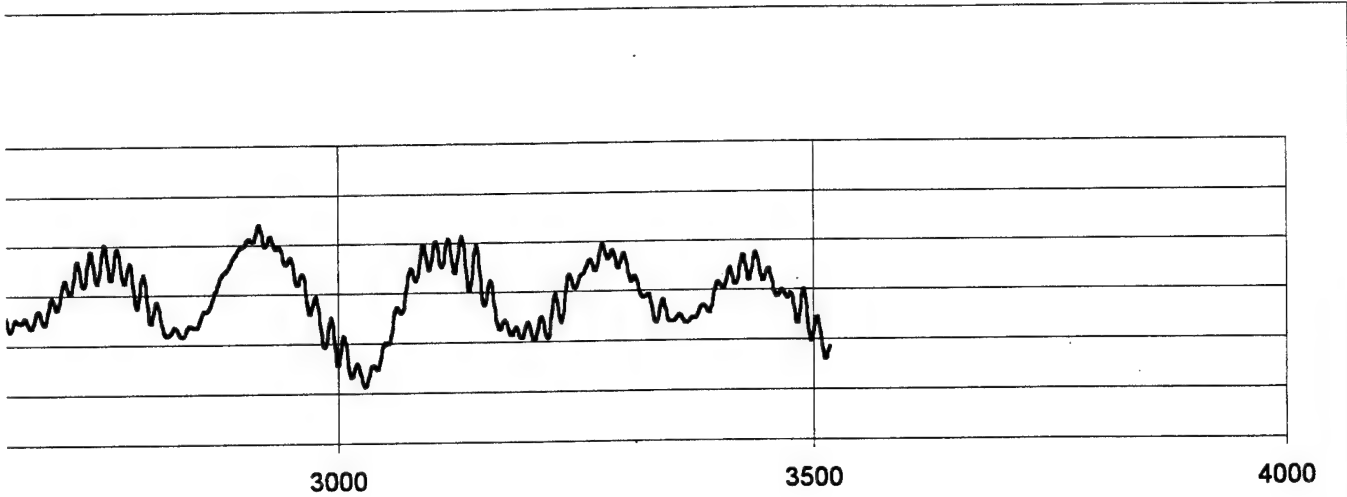
Filtered Low Frequency Time History



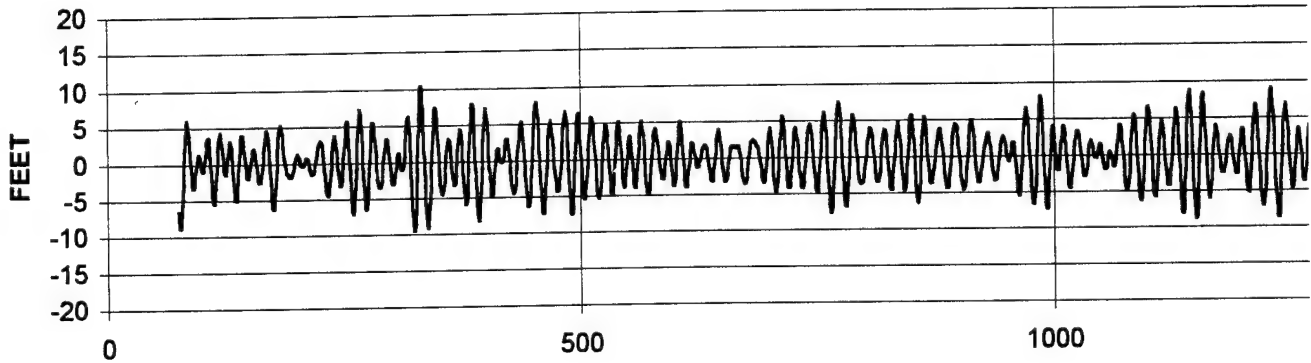
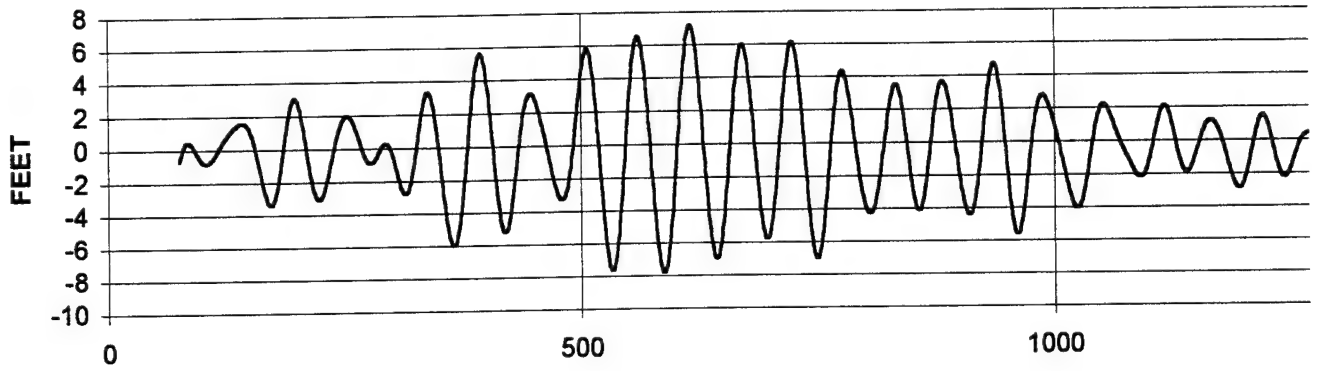
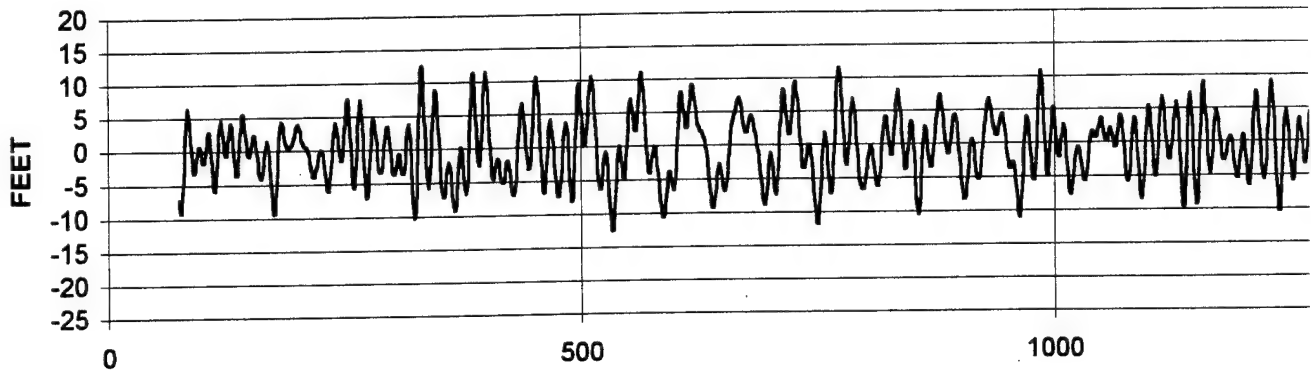
Filtered High Frequency Time History



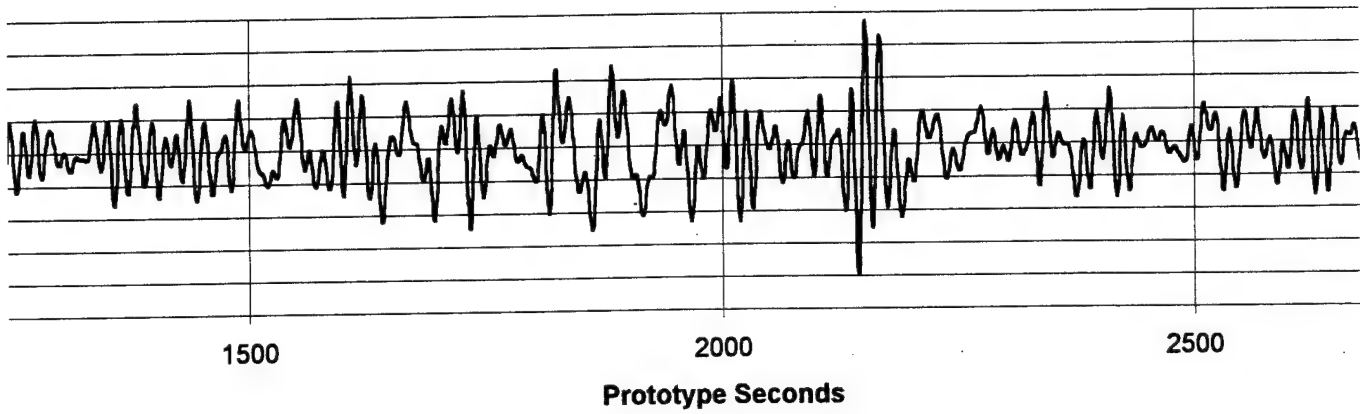
TEST A809 - PT SURGE



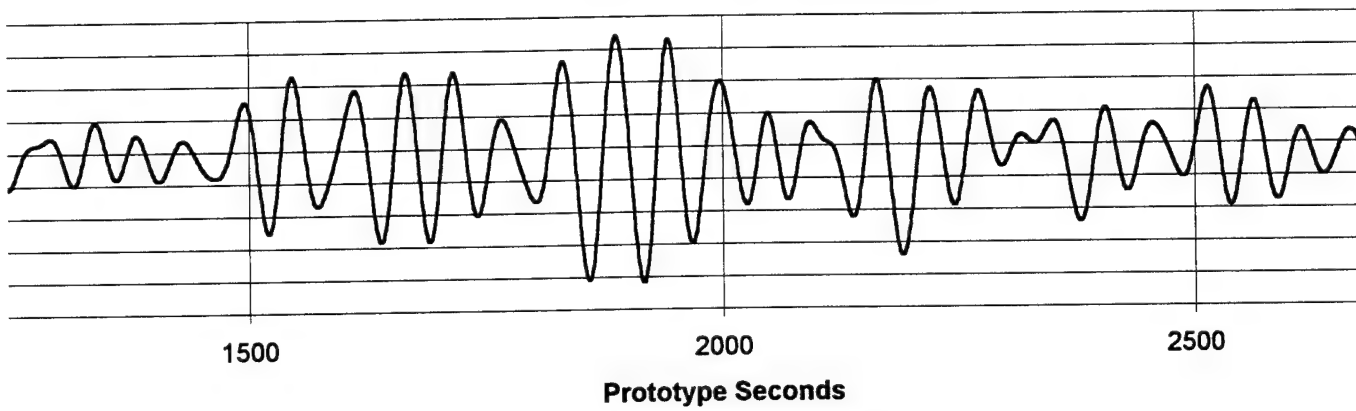
TEST A809 - PT HEAVE



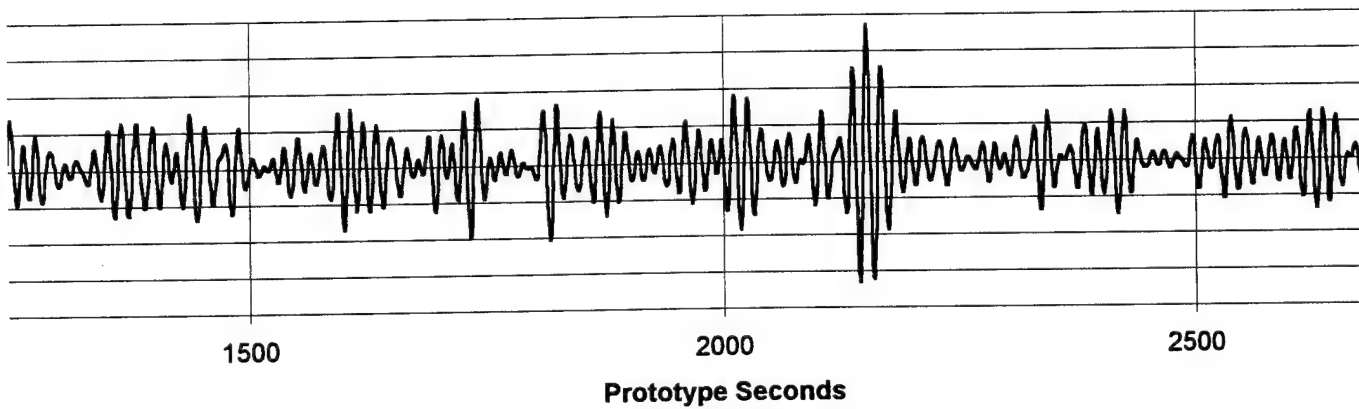
Unfiltered Time History



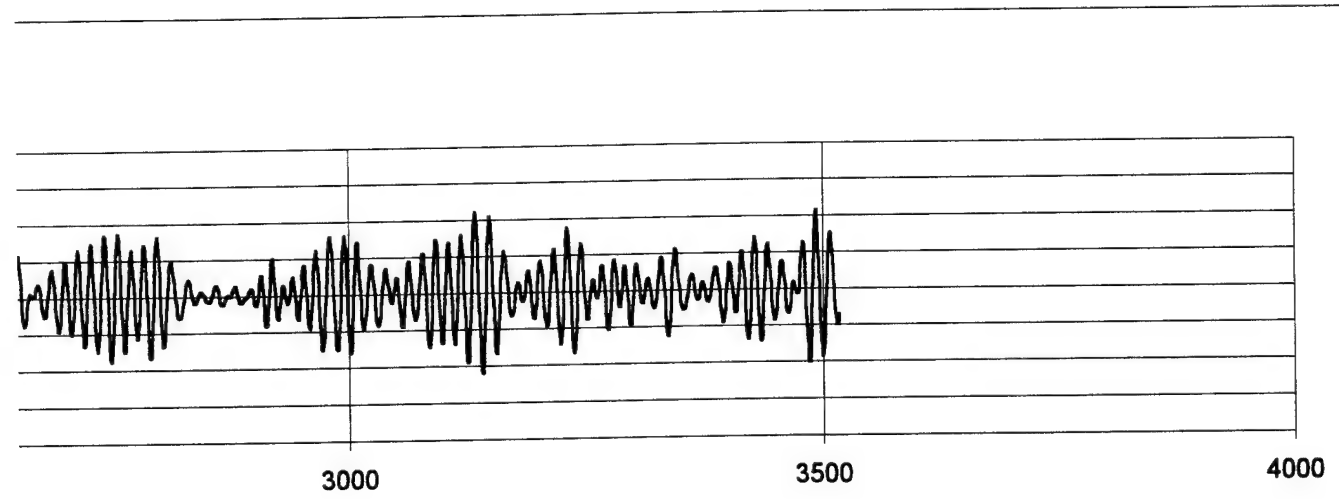
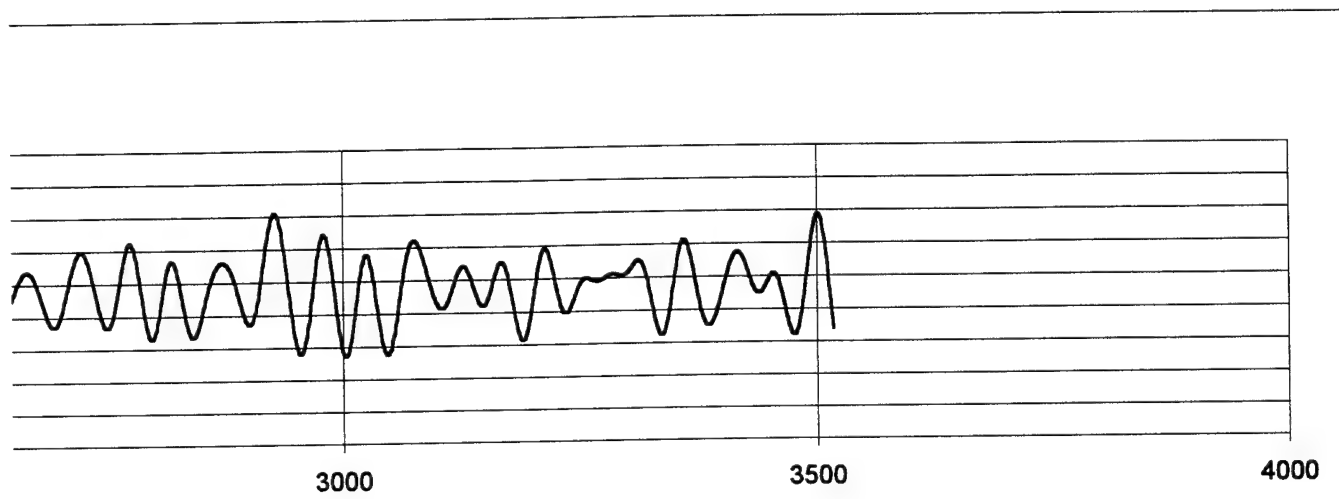
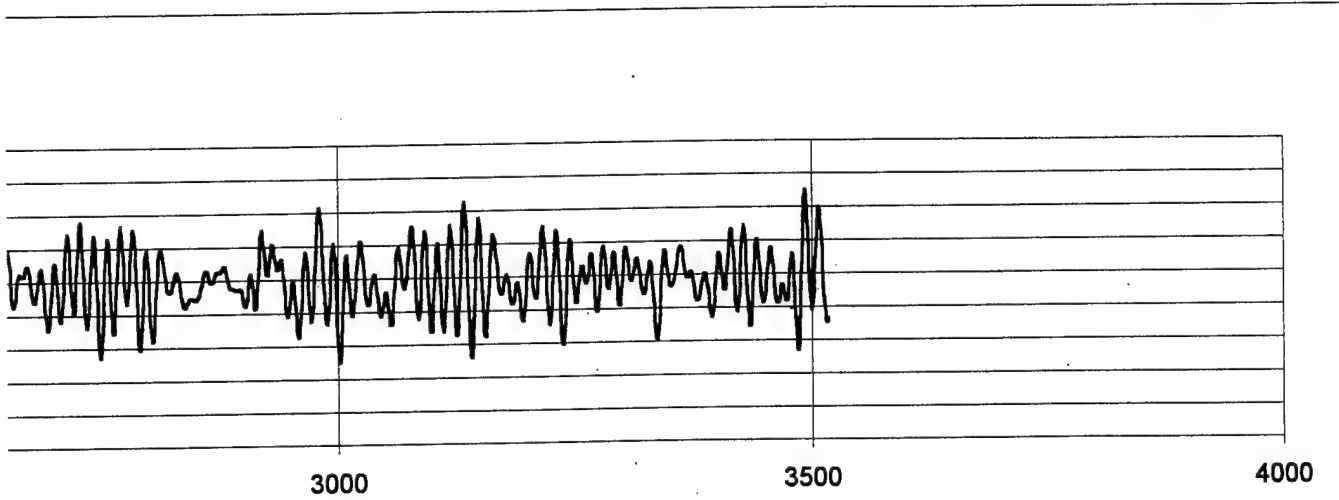
Filtered Low Frequency Time History



Filtered High Frequency Time History

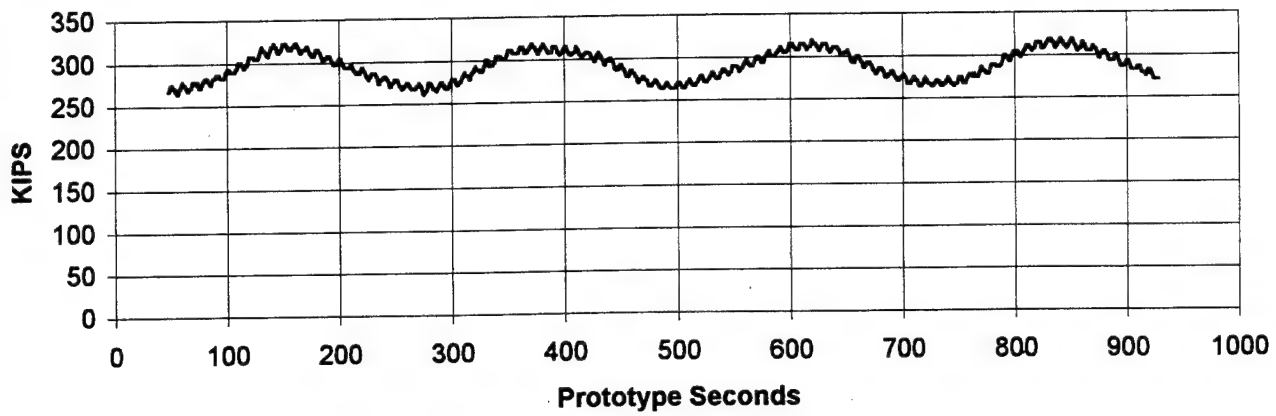


TEST A809 - PT HEAVE

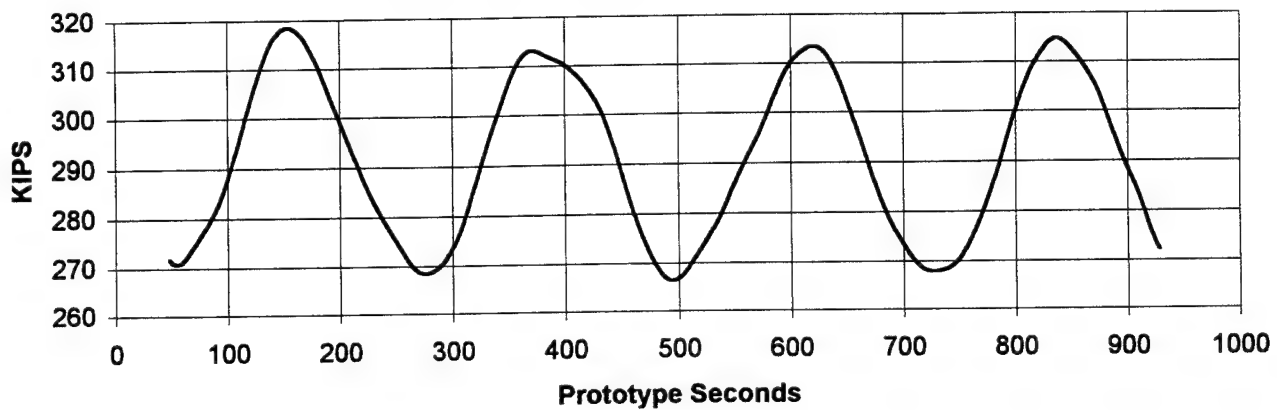


TEST A903 - ML_1 TENSION

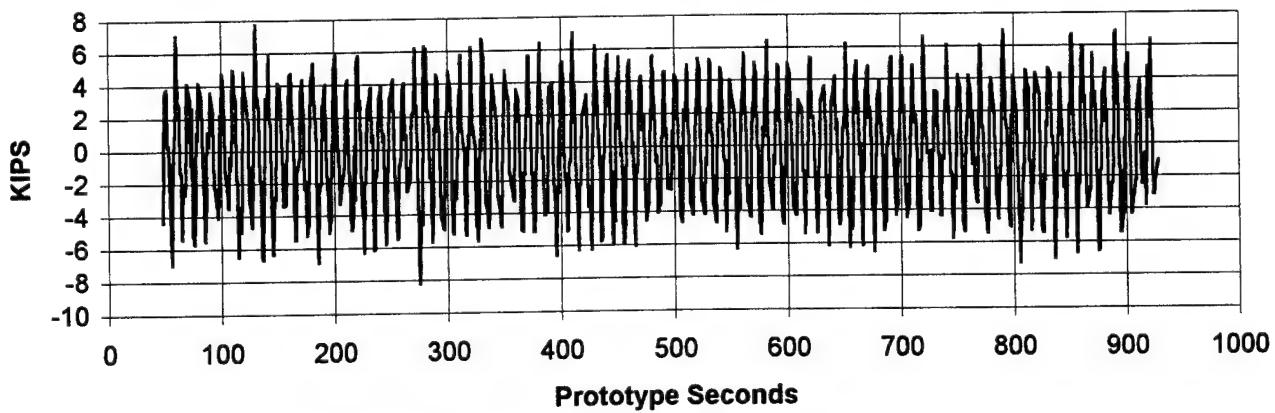
Unfiltered Time History



Filtered Low Frequency Time History

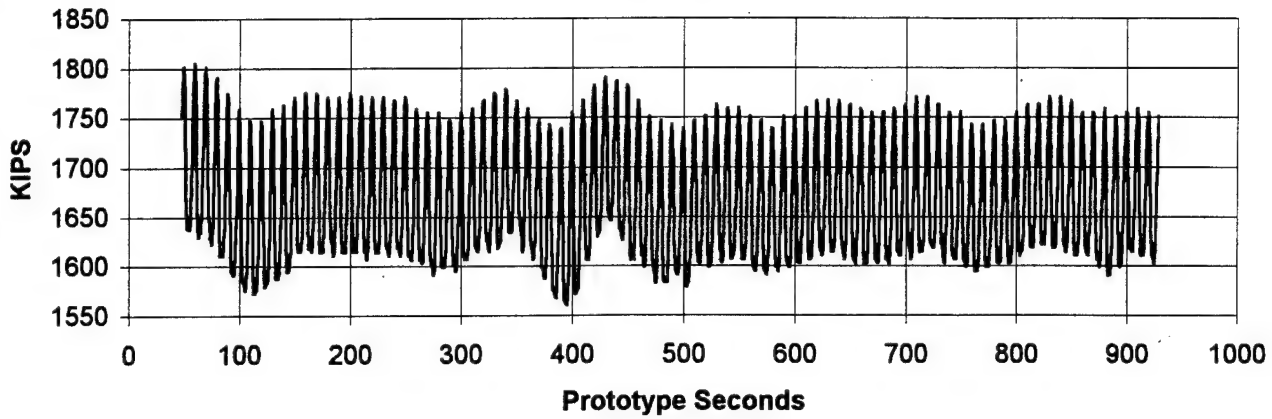


Filtered High Frequency Time History

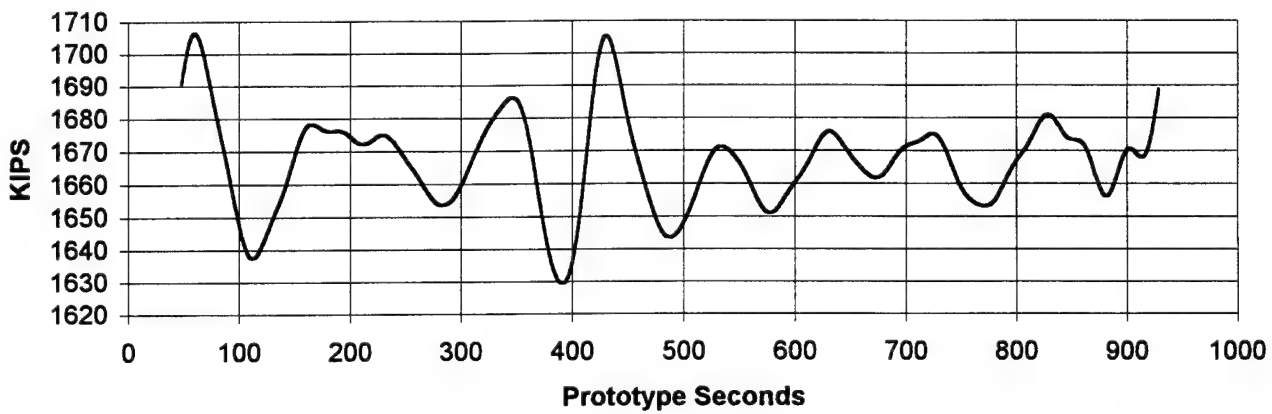


TEST A903 - BUOY 1 TENSION

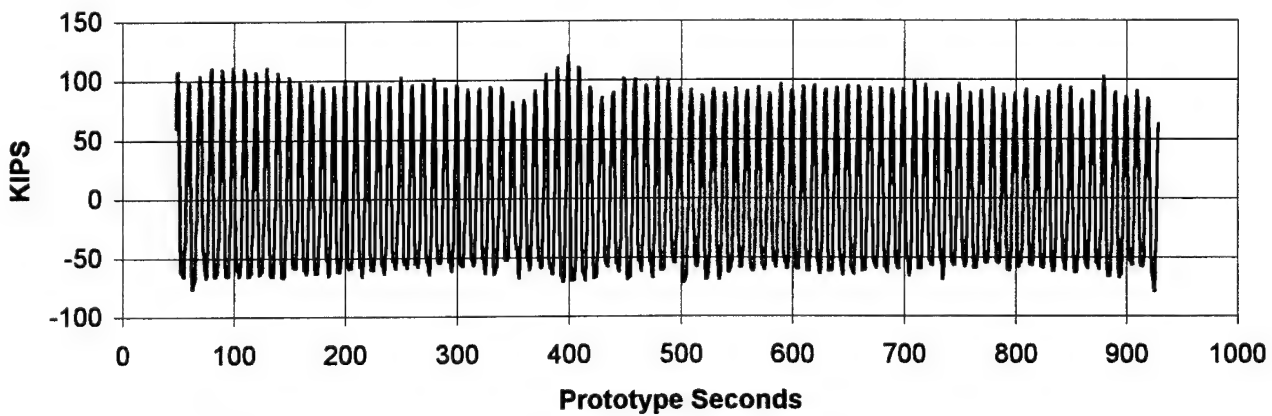
Unfiltered Time History



Filtered Low Frequency Time History

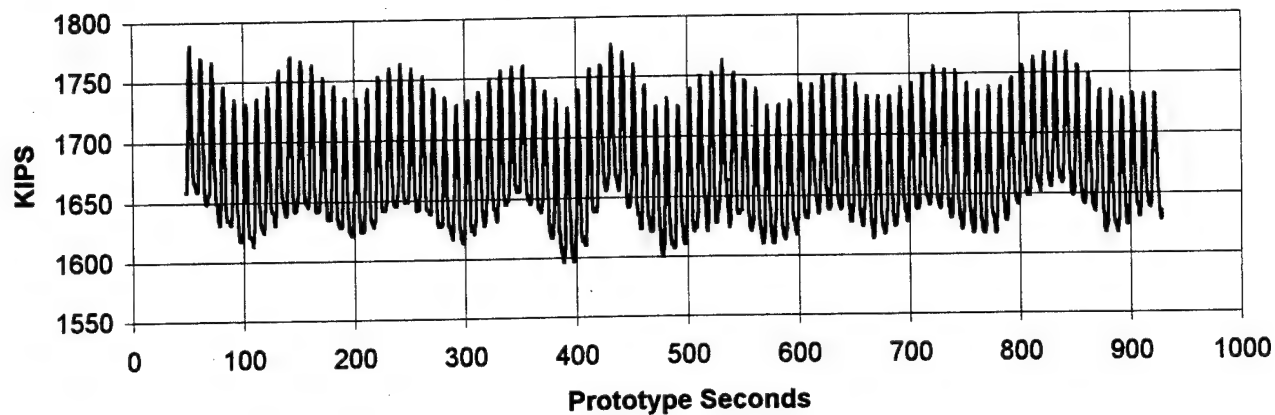


Filtered High Frequency Time History

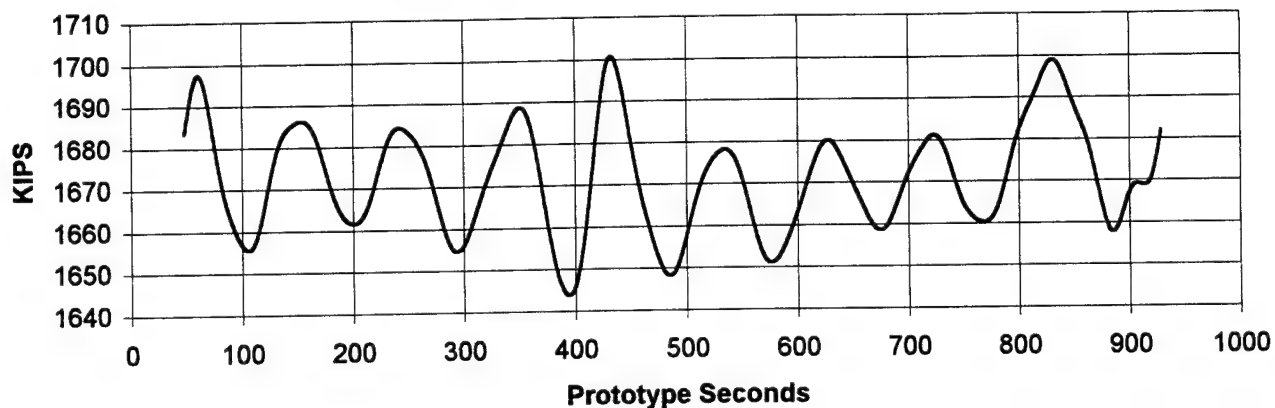


TEST A903 - BUOY 2 TENSION

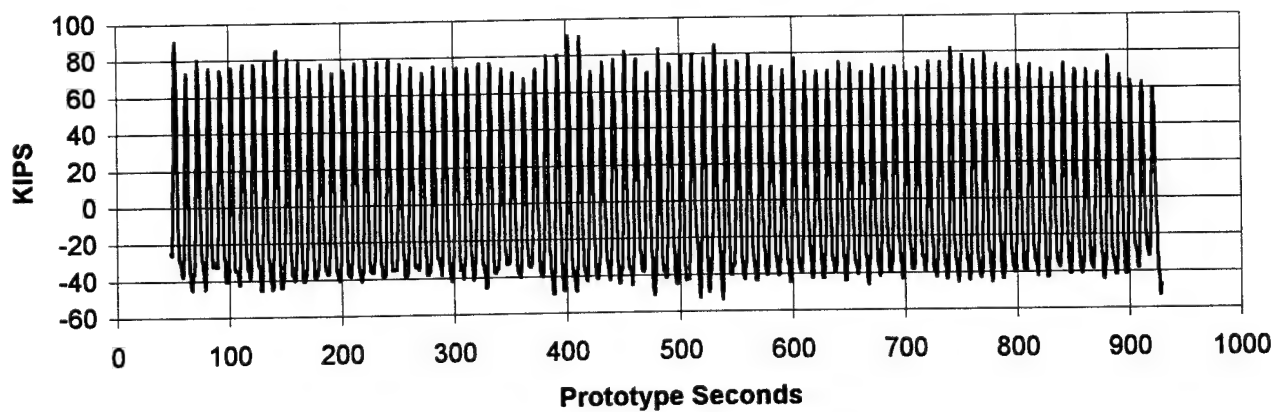
Unfiltered Time History



Filtered Low Frequency Time History

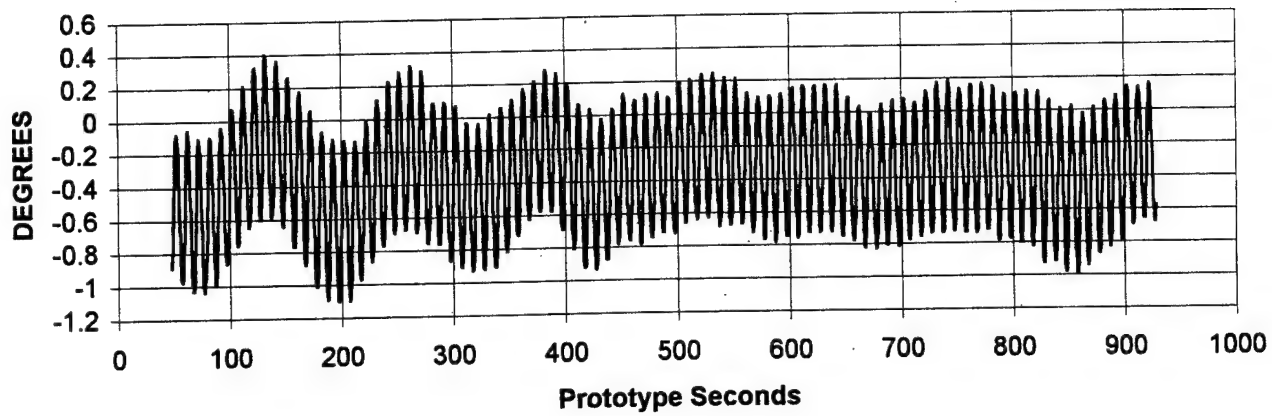


Filtered High Frequency Time History

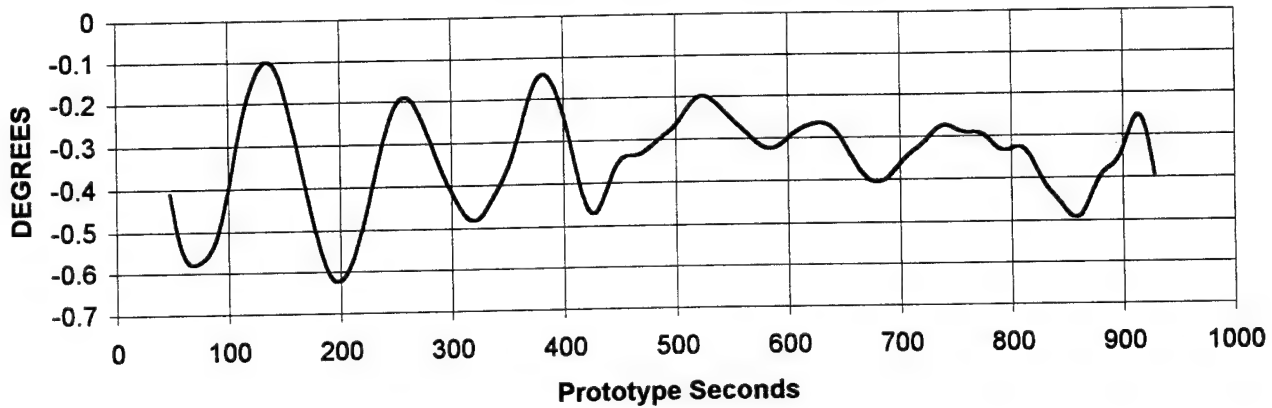


TEST A903 - PITCH

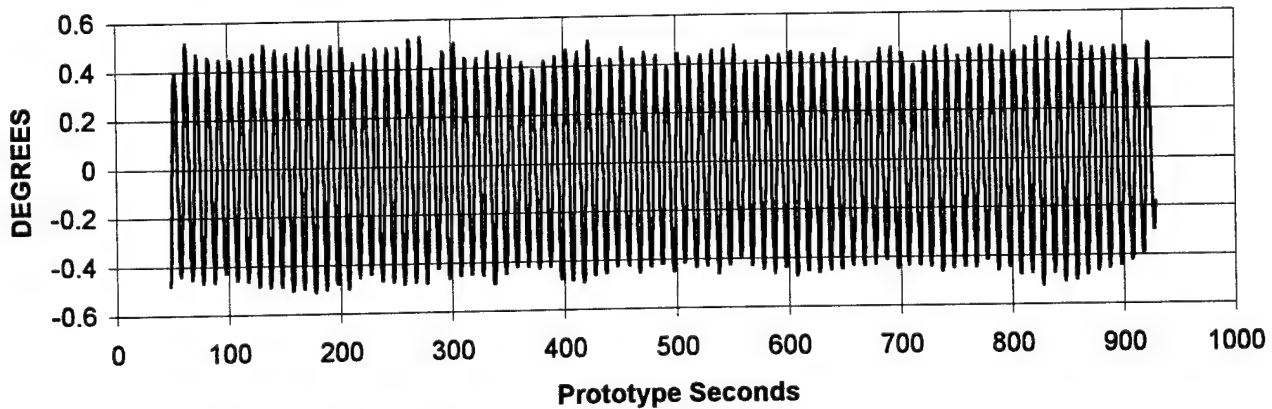
Unfiltered Time History



Filtered Low Frequency Time History

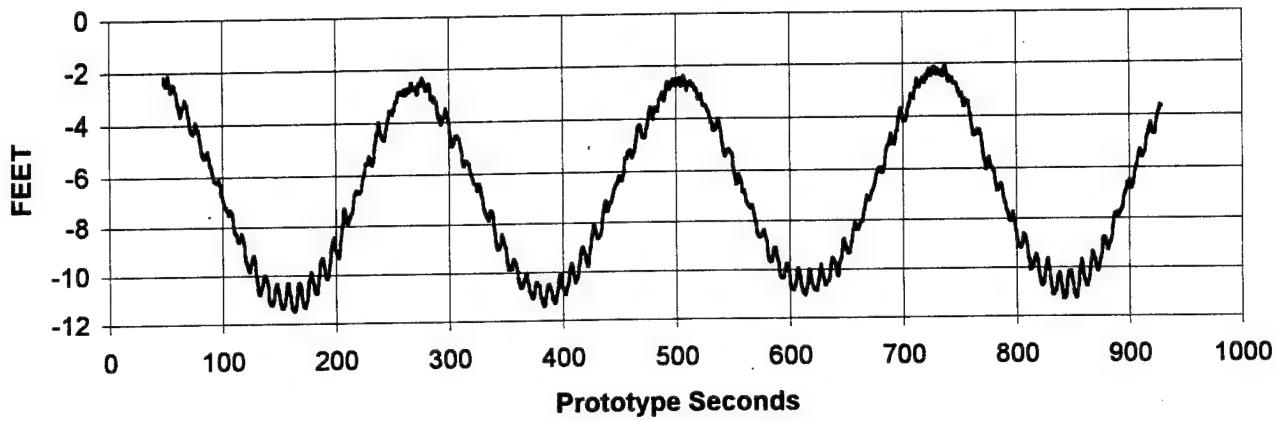


Filtered High Frequency Time History

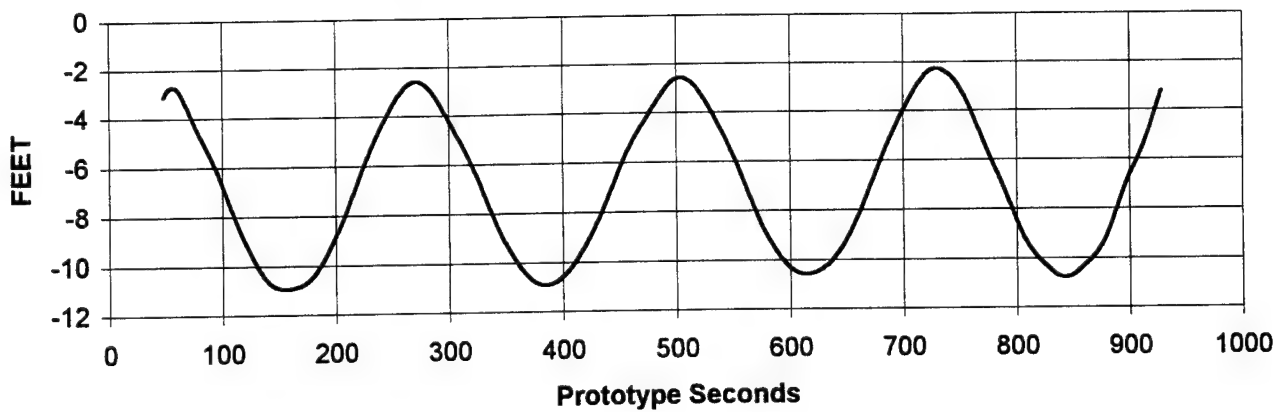


TEST A903 - PT SURGE

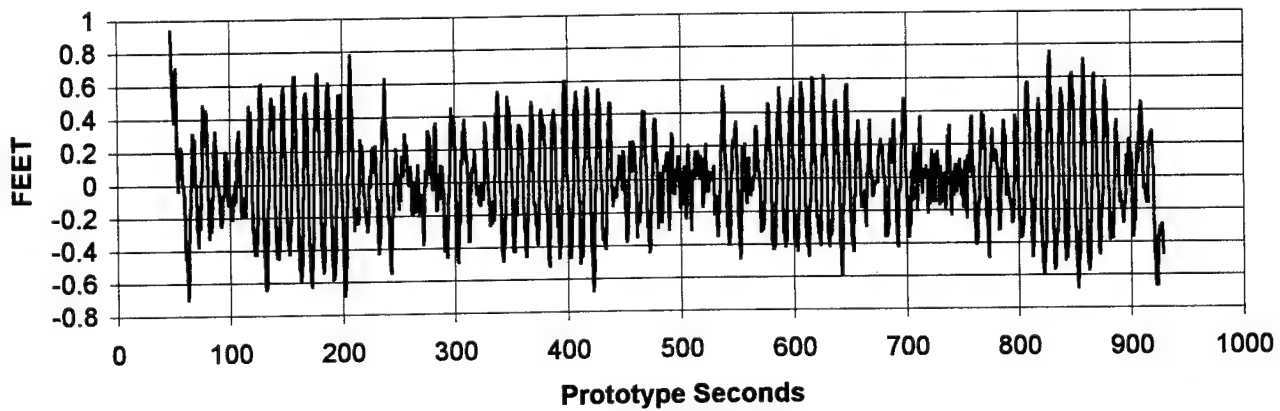
Unfiltered Time History



Filtered Low Frequency Time History

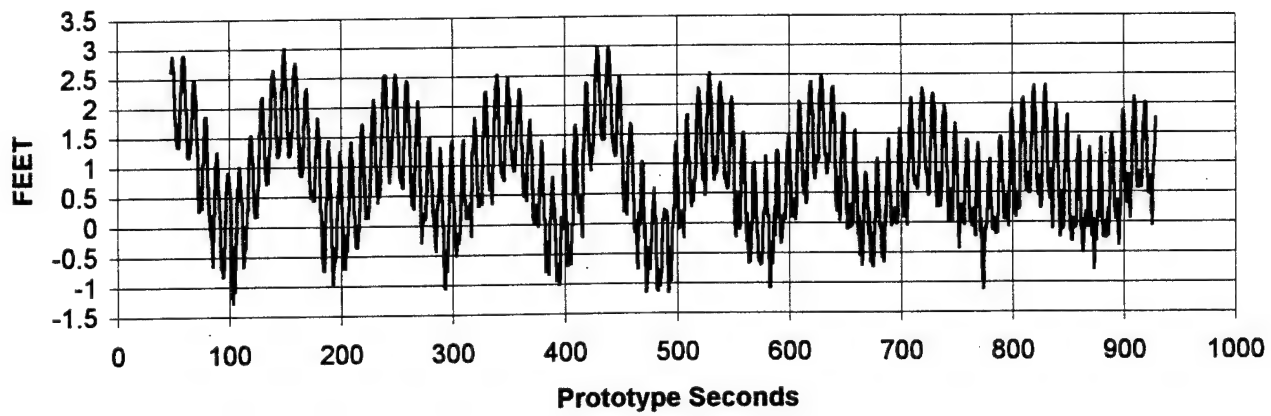


Filtered High Frequency Time History

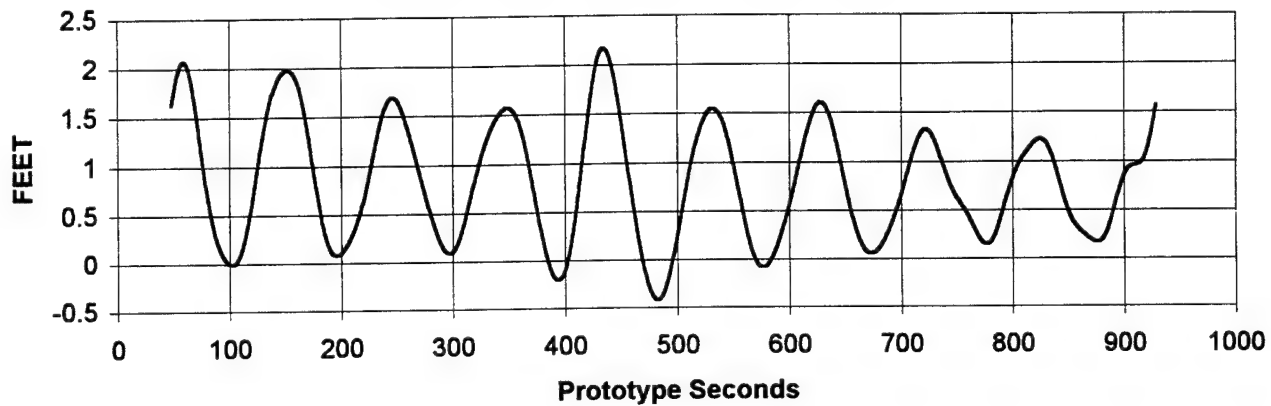


TEST A903 - PT HEAVE

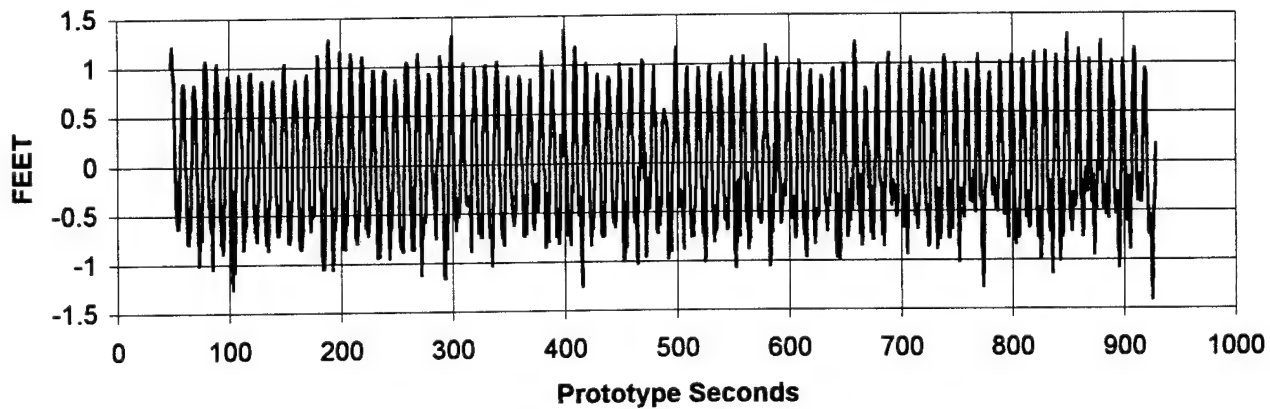
Unfiltered Time History



Filtered Low Frequency Time History

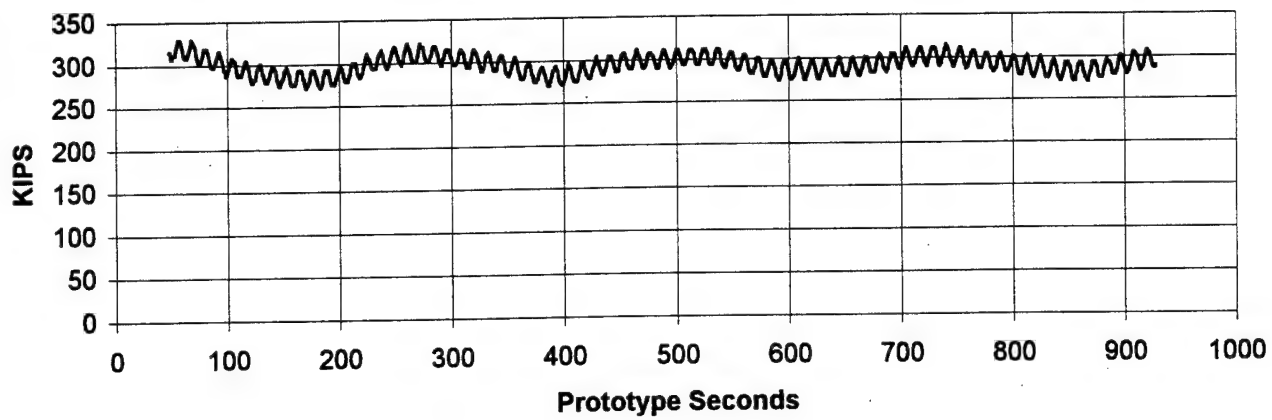


Filtered High Frequency Time History

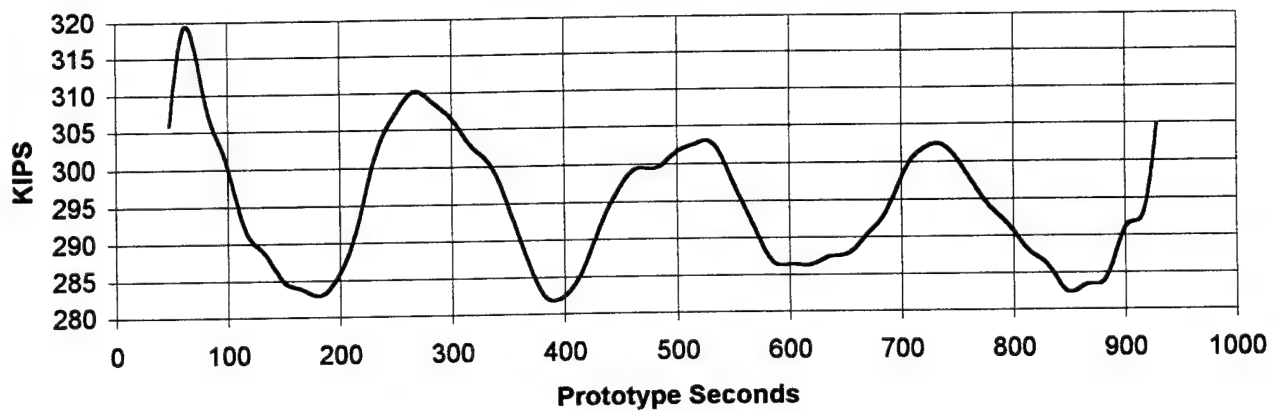


TEST A904 - ML_1 TENSION

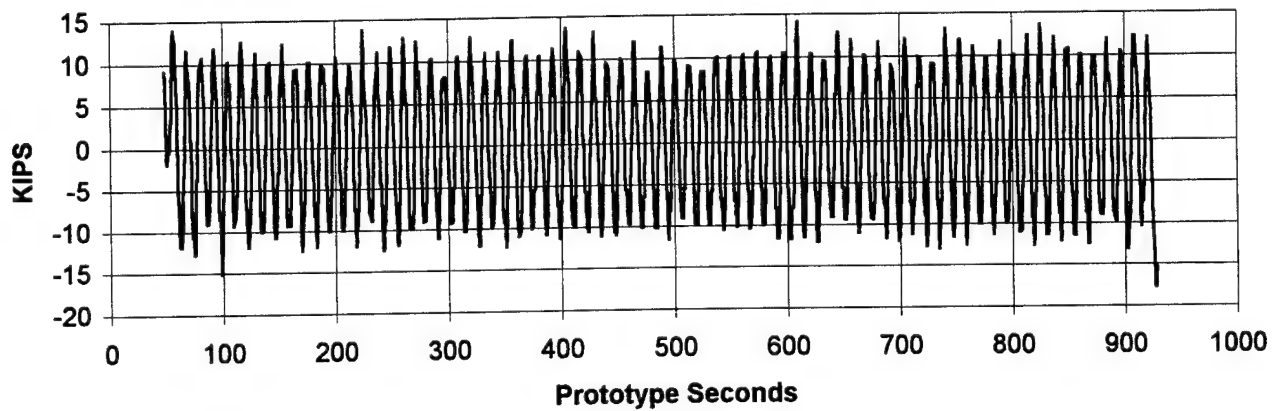
Unfiltered Time History



Filtered Low Frequency Time History

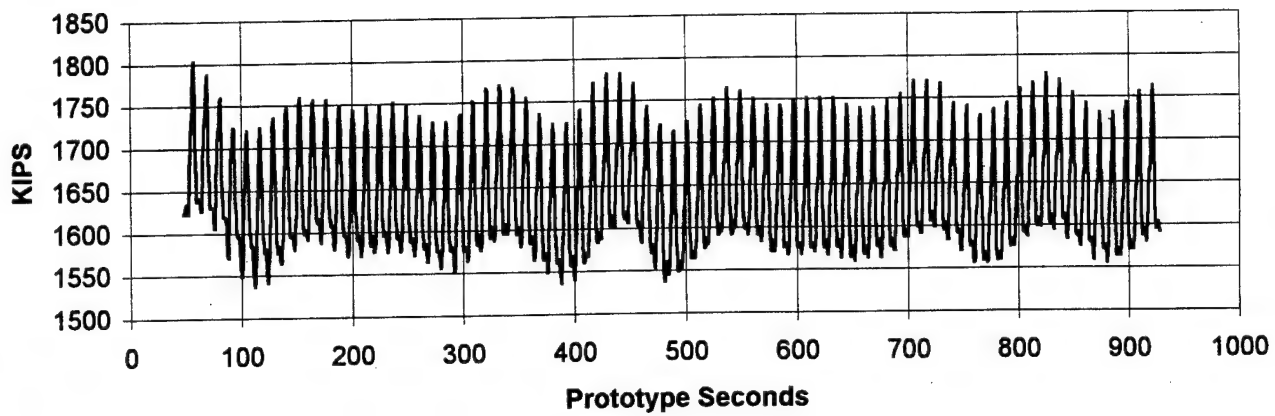


Filtered High Frequency Time History

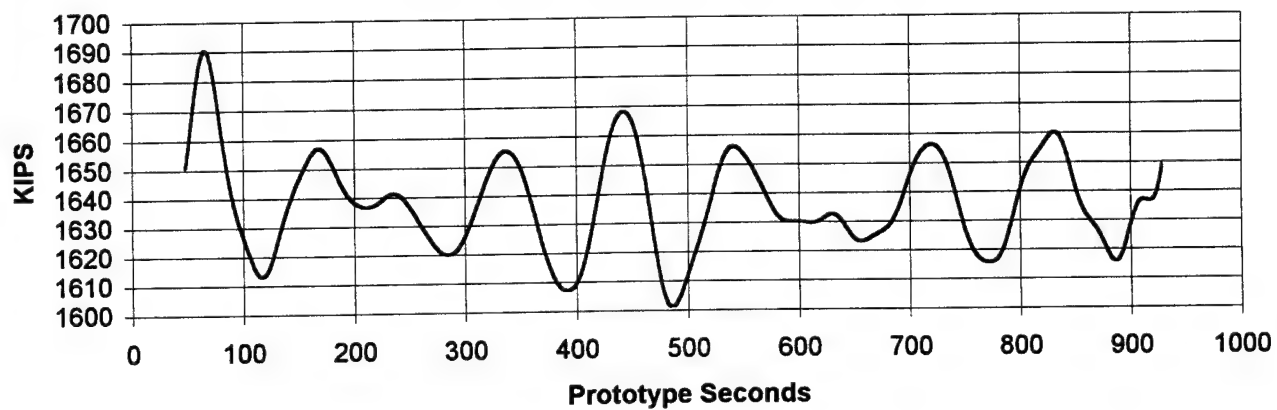


TEST A904 - BUOY 1 TENSION

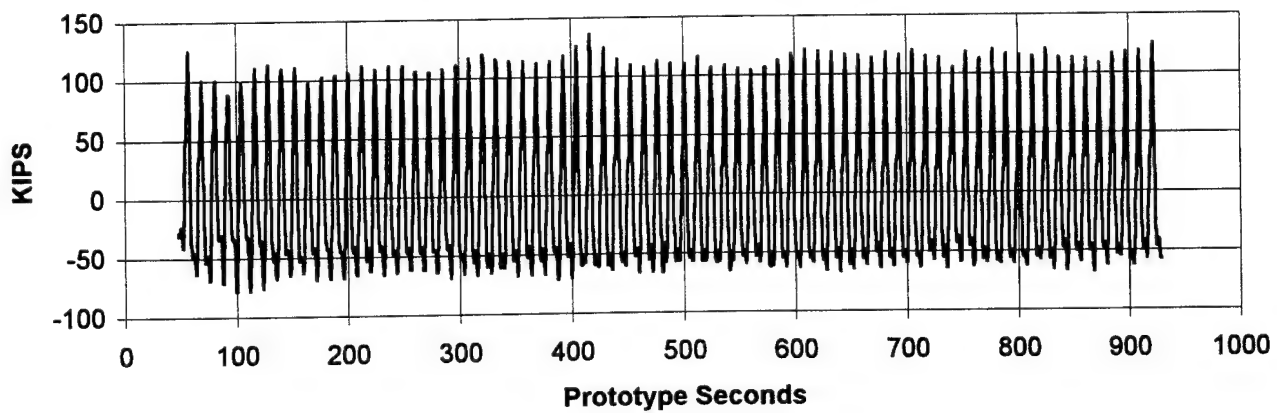
Unfiltered Time History



Filtered Low Frequency Time History

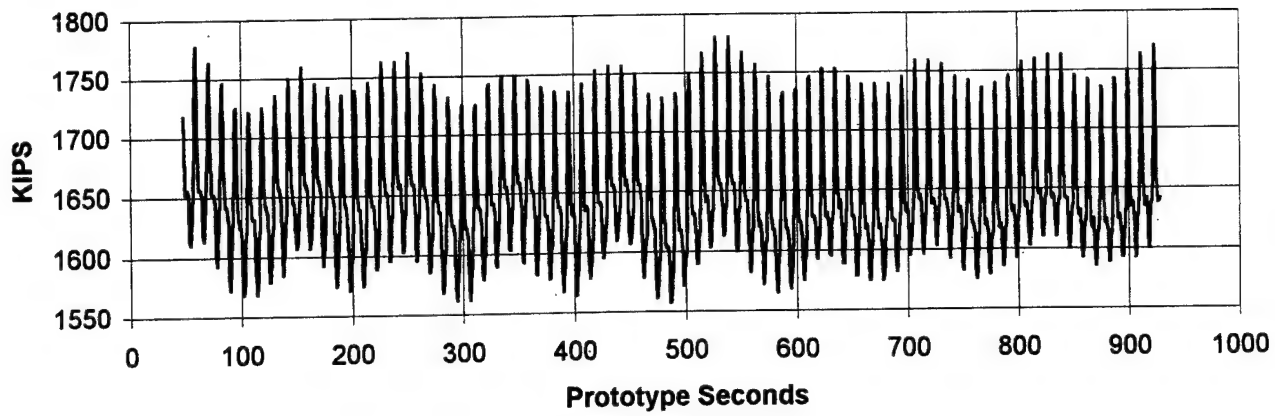


Filtered High Frequency Time History

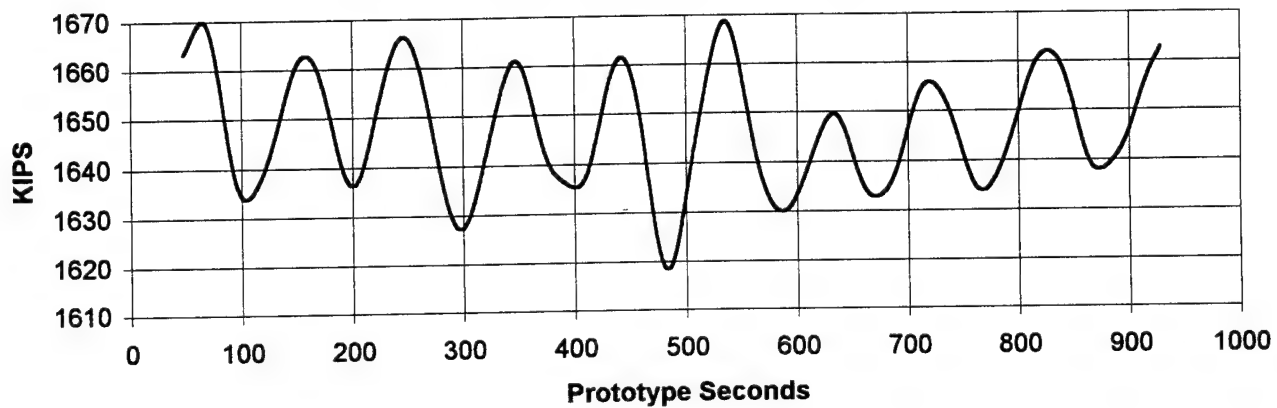


TEST A904 - BUOY 2 TENSION

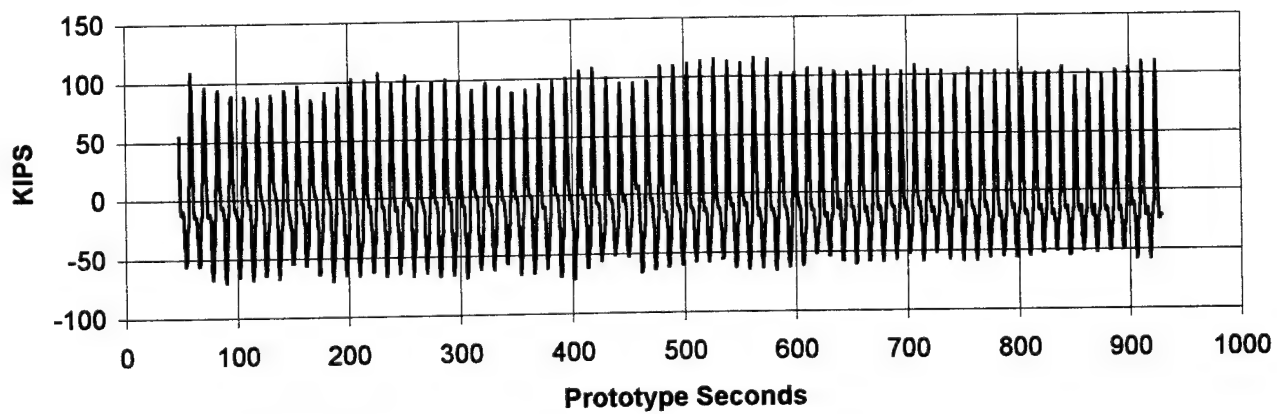
Unfiltered Time History



Filtered Low Frequency Time History

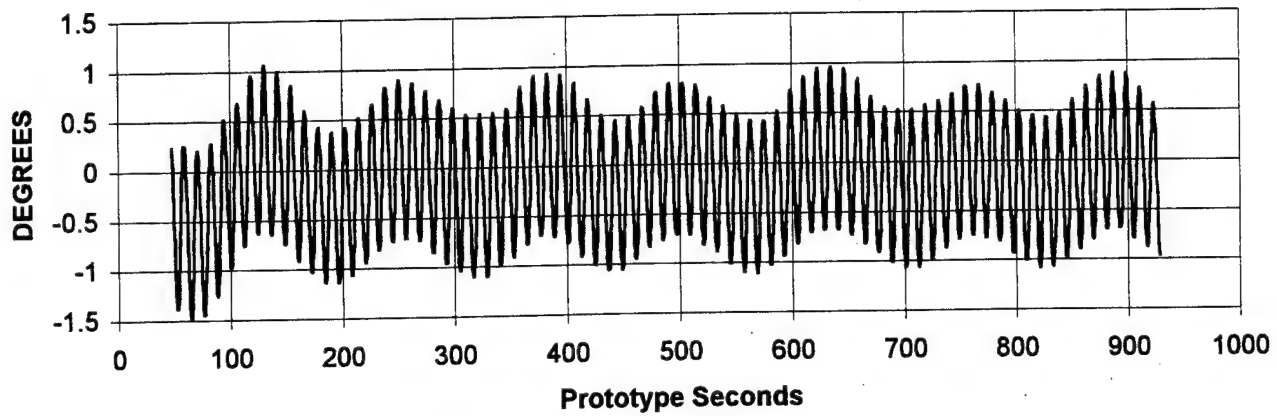


Filtered High Frequency Time History

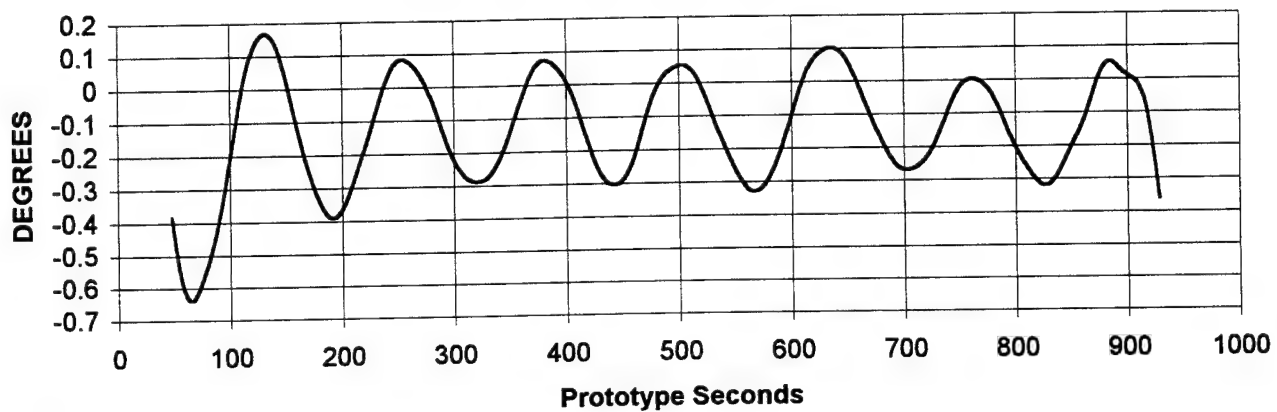


TEST A904 - PITCH

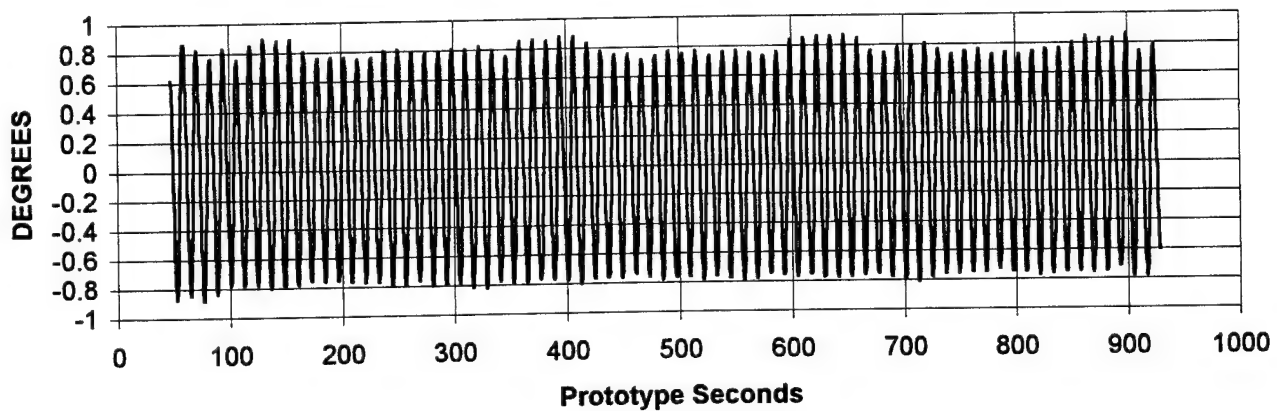
Unfiltered Time History



Filtered Low Frequency Time History

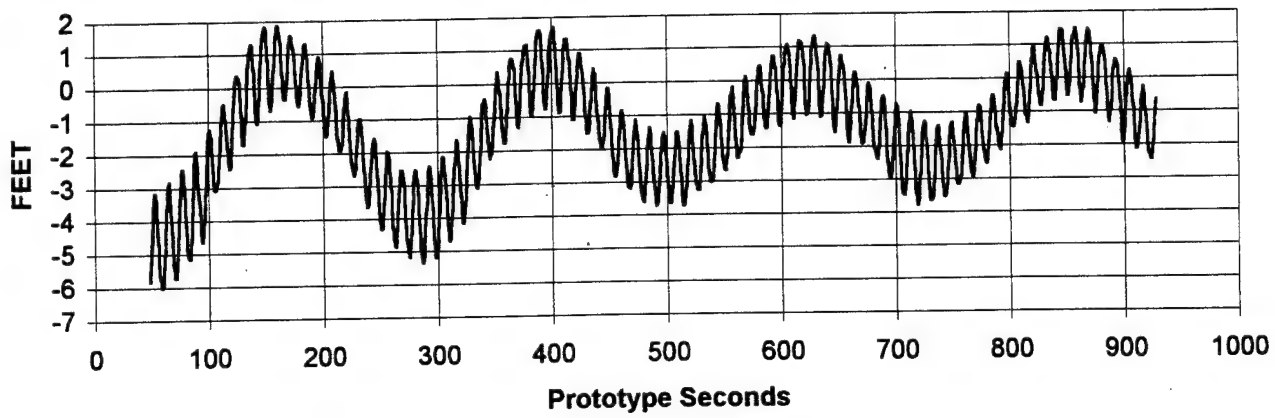


Filtered High Frequency Time History

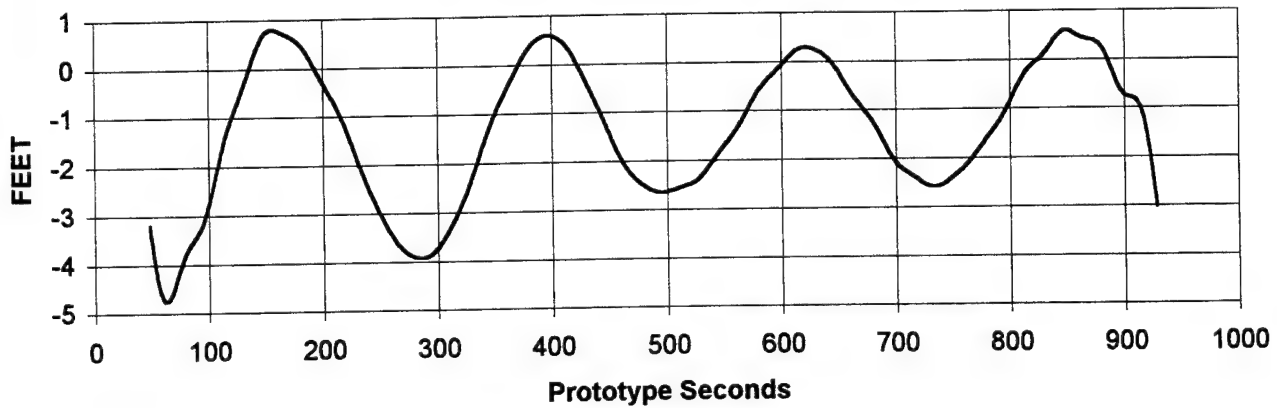


TEST A904 - PT SURGE

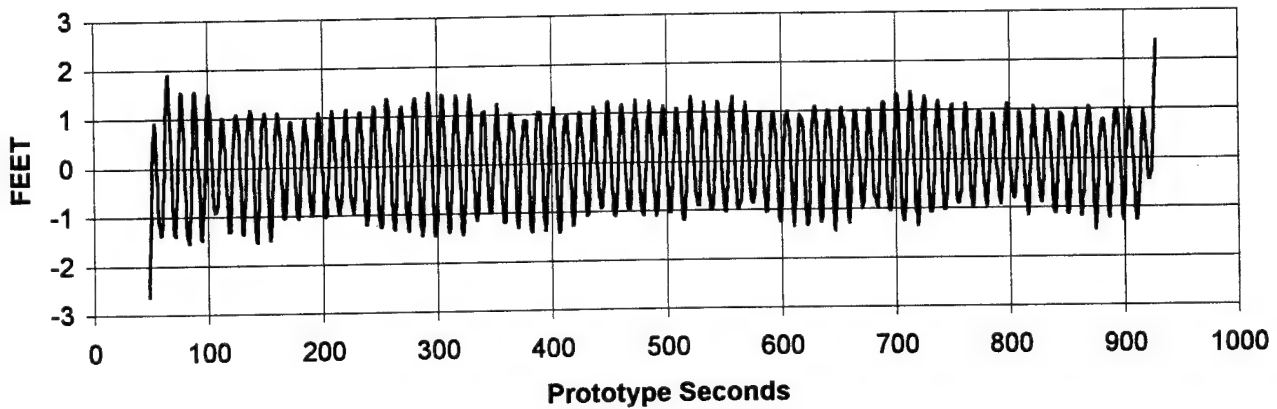
Unfiltered Time History



Filtered Low Frequency Time History

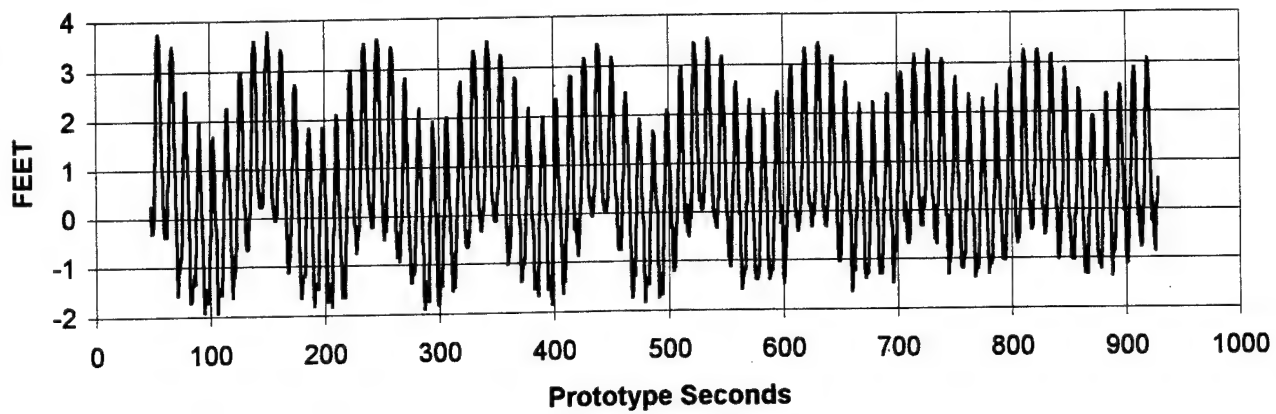


Filtered High Frequency Time History

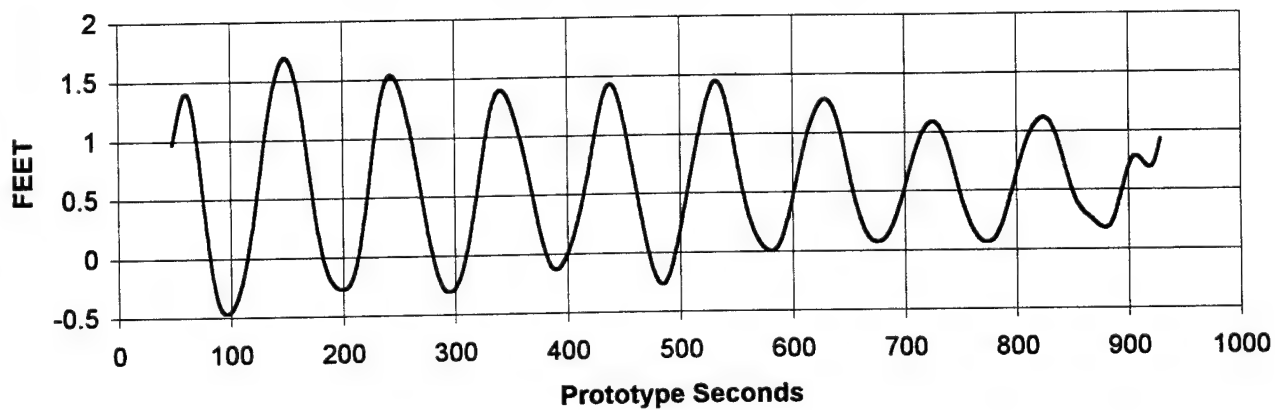


TEST A904 - PT HEAVE

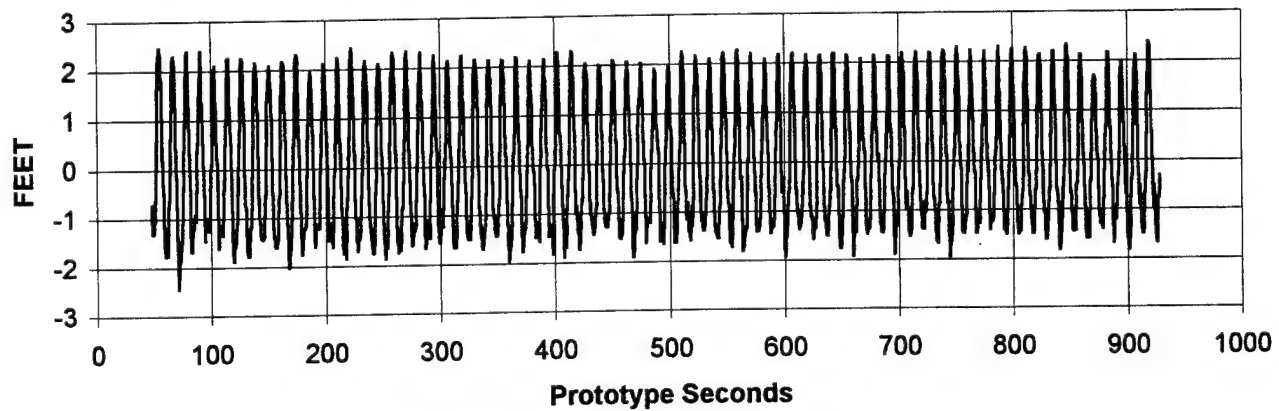
Unfiltered Time History



Filtered Low Frequency Time History

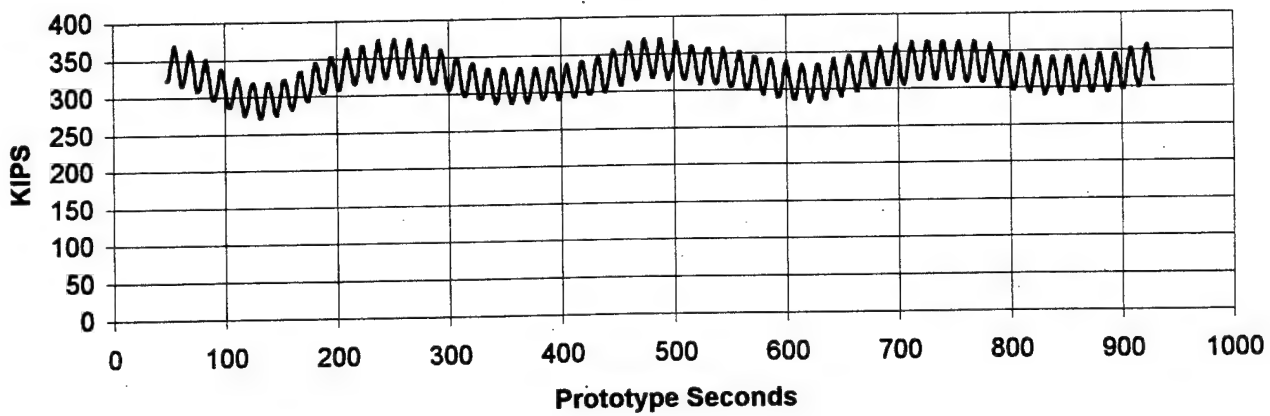


Filtered High Frequency Time History

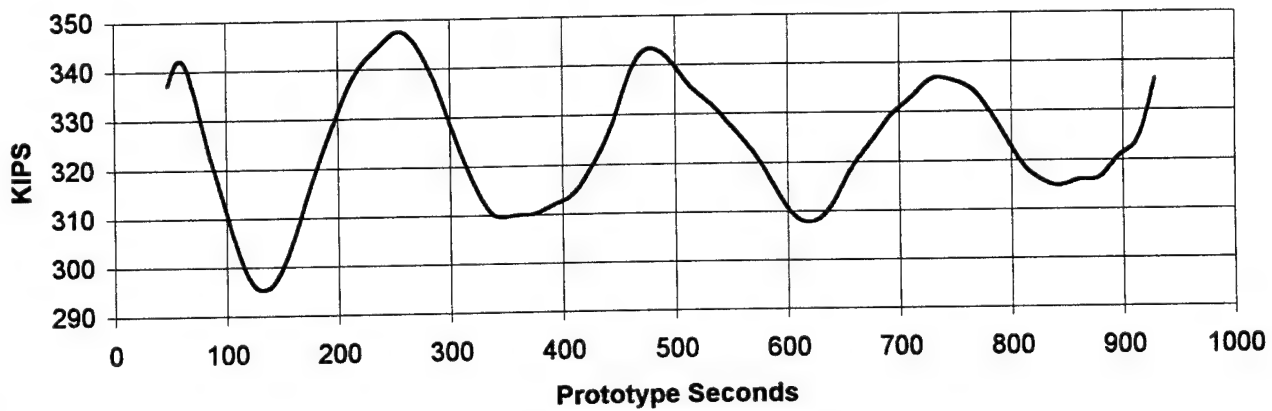


TEST A905 - ML_1 TENSION

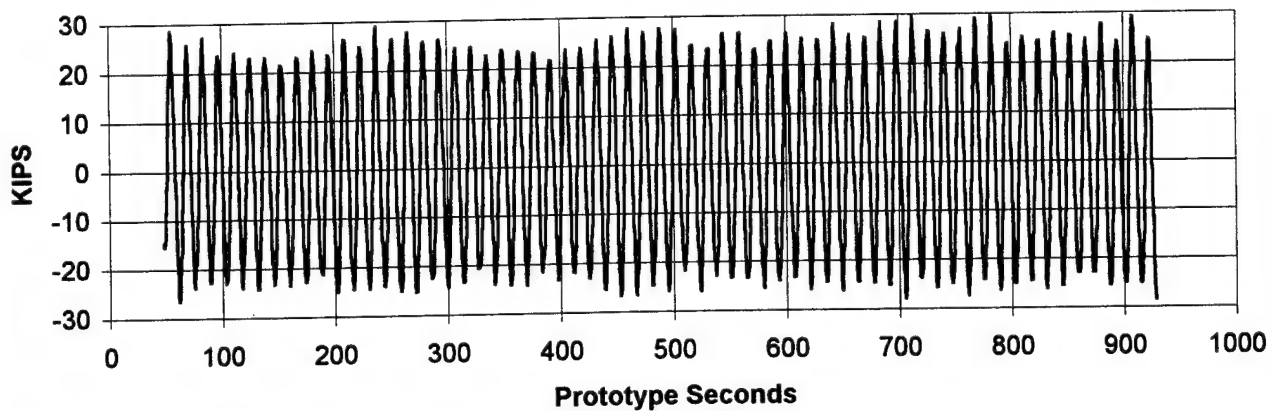
Unfiltered Time History



Filtered Low Frequency Time History

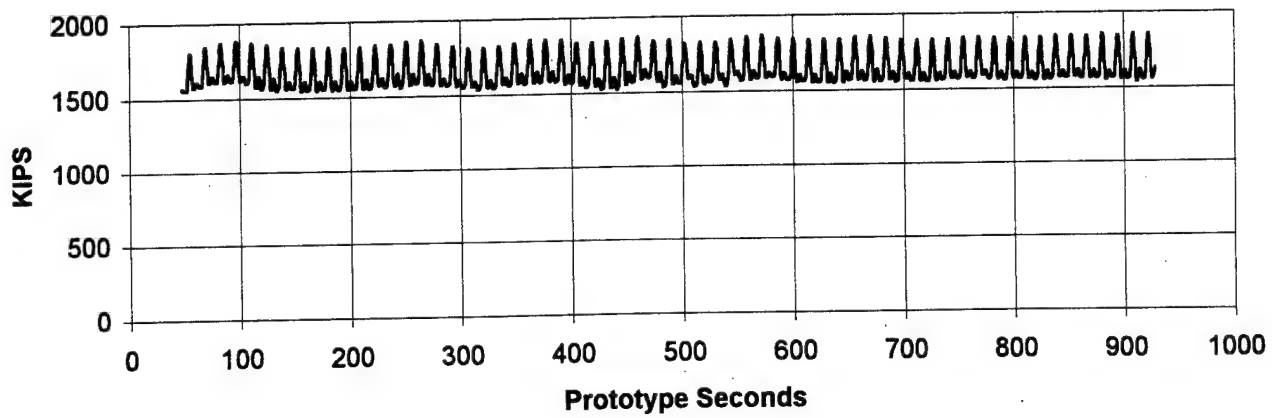


Filtered High Frequency Time History

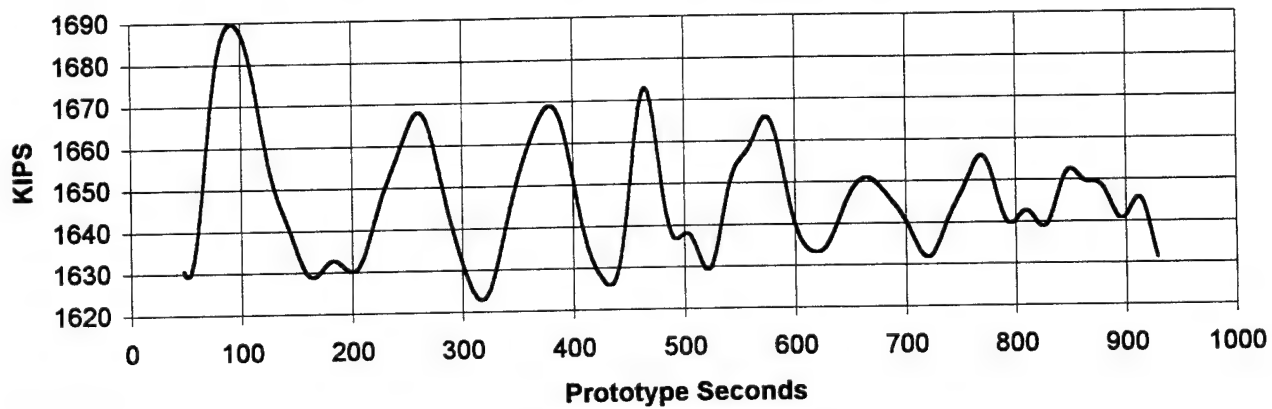


TEST A905 - BUOY 1 TENSION

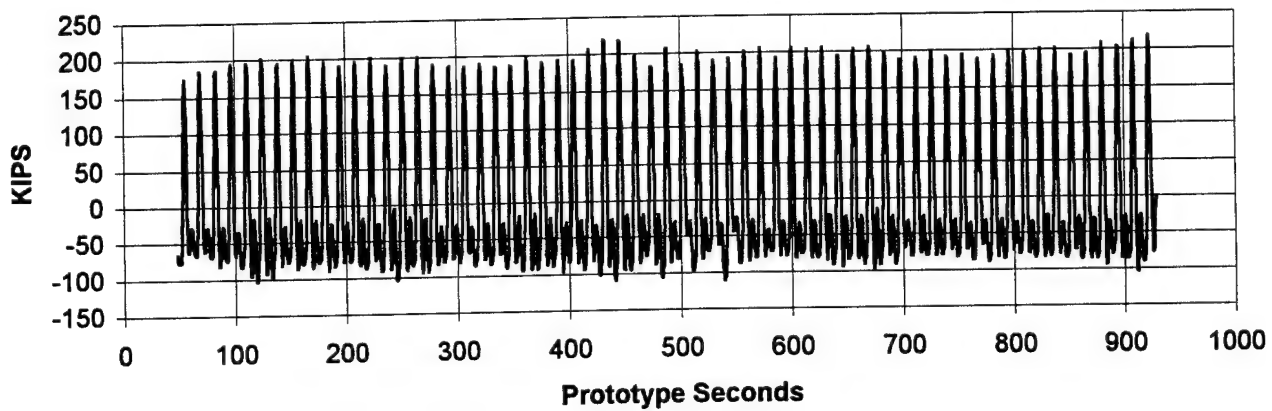
Unfiltered Time History



Filtered Low Frequency Time History

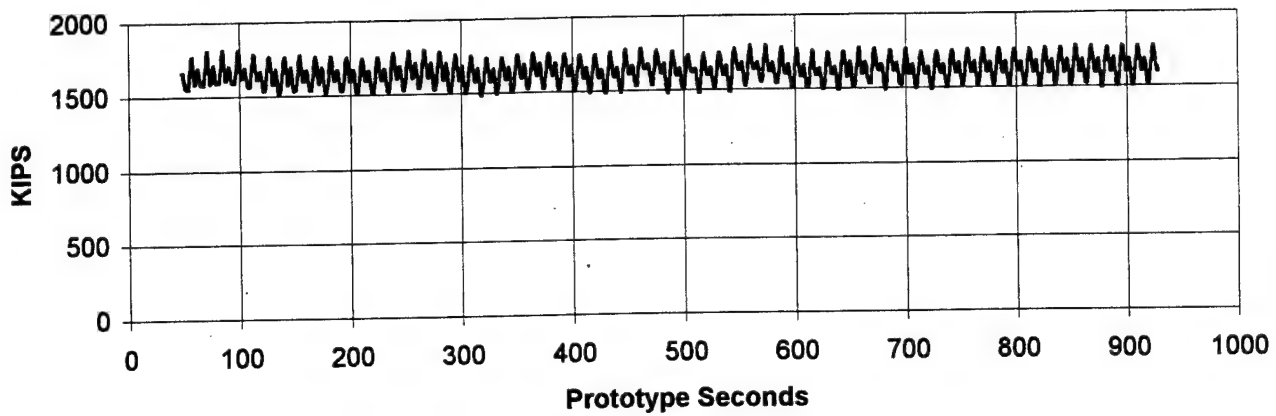


Filtered High Frequency Time History

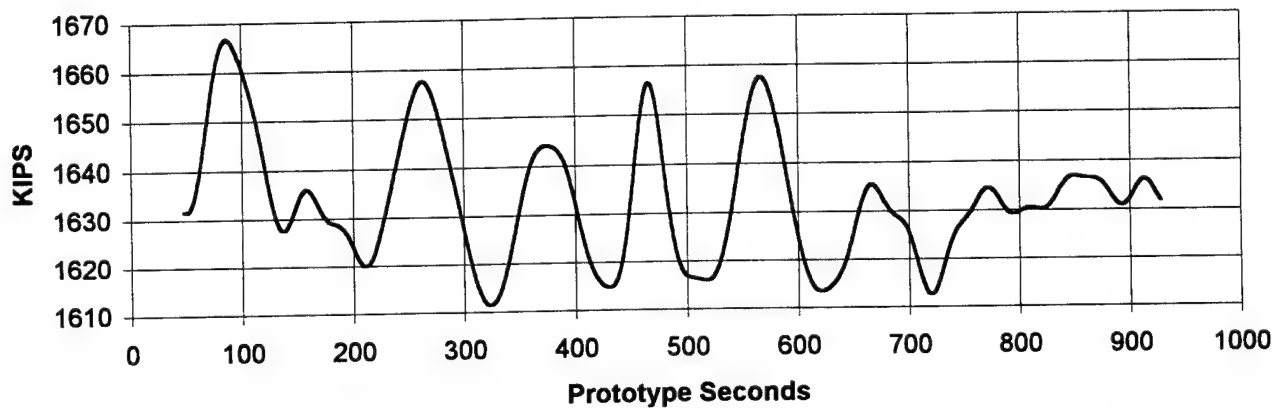


TEST A905 - BUOY 2 TENSION

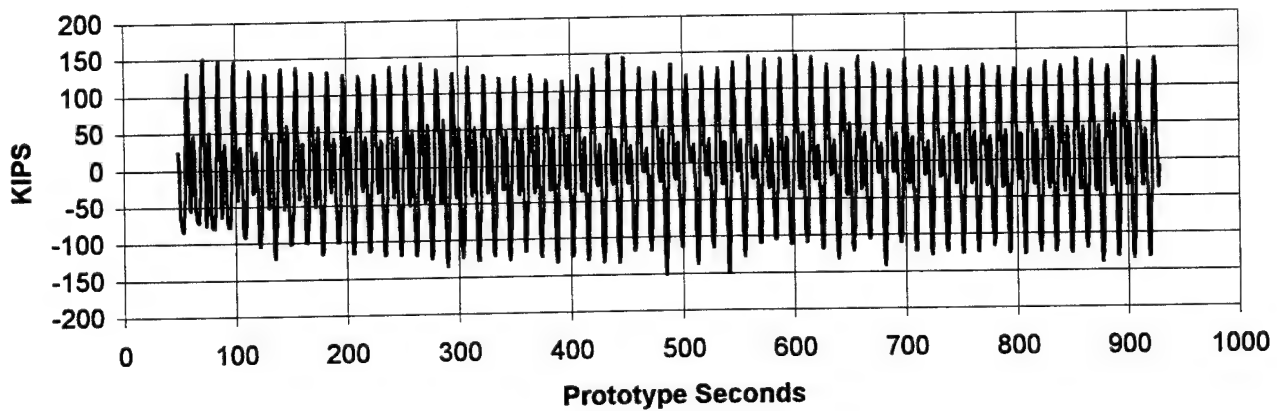
Unfiltered Time History



Filtered Low Frequency Time History

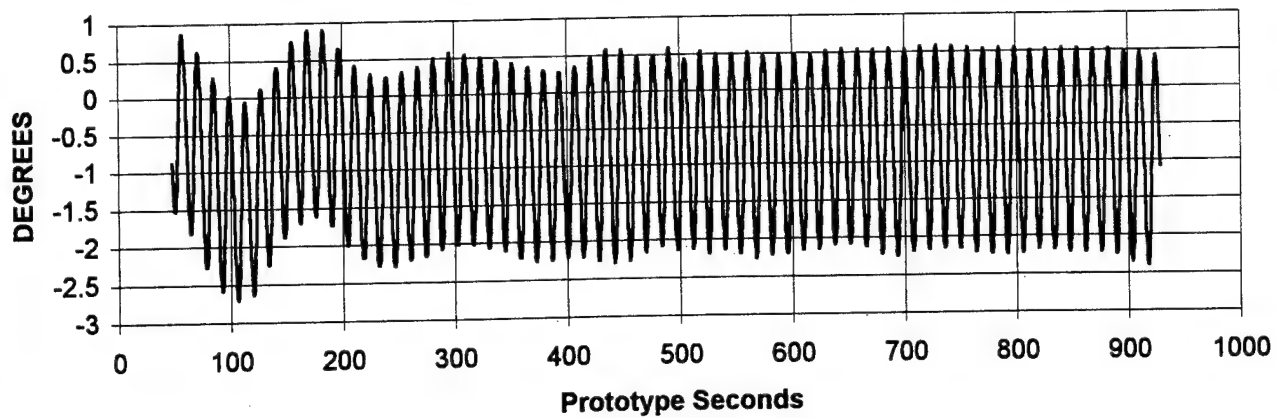


Filtered High Frequency Time History

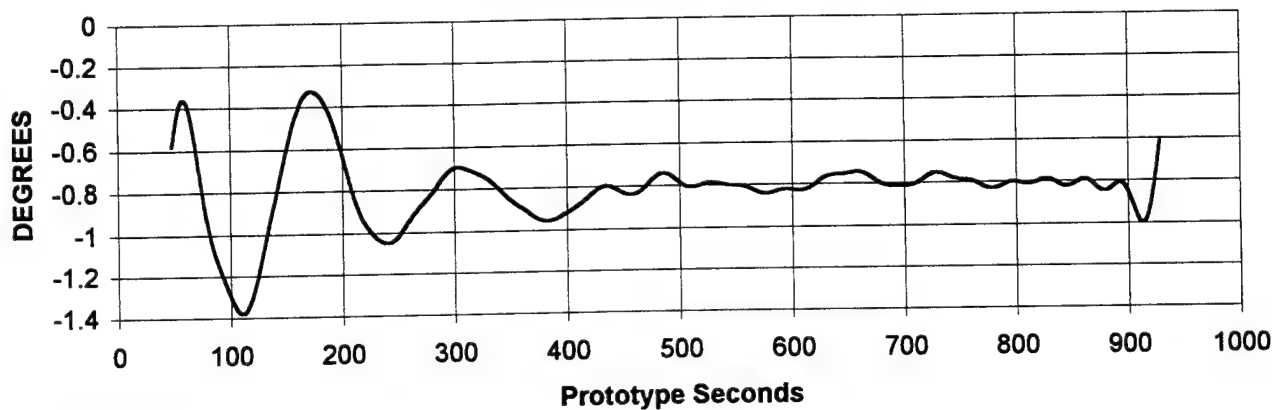


TEST A905 - PITCH

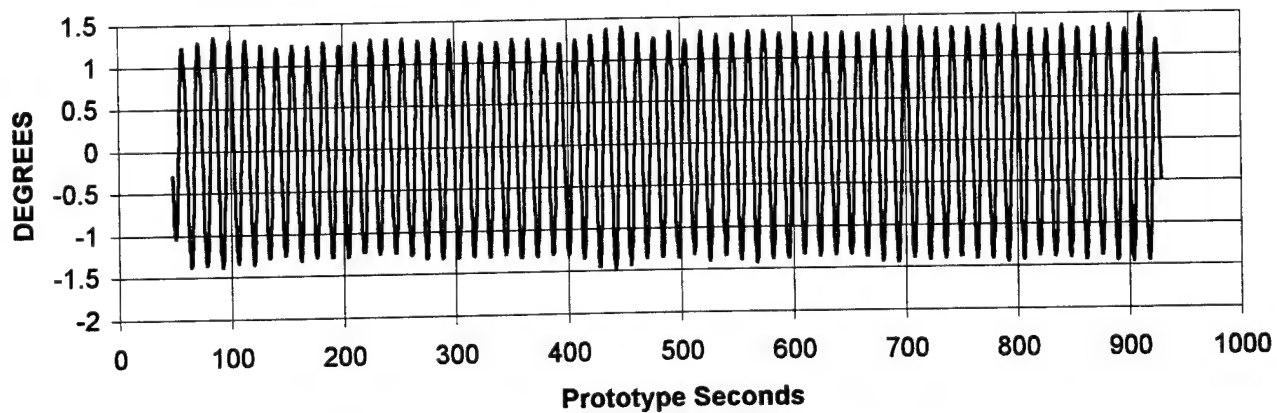
Unfiltered Time History



Filtered Low Frequency Time History

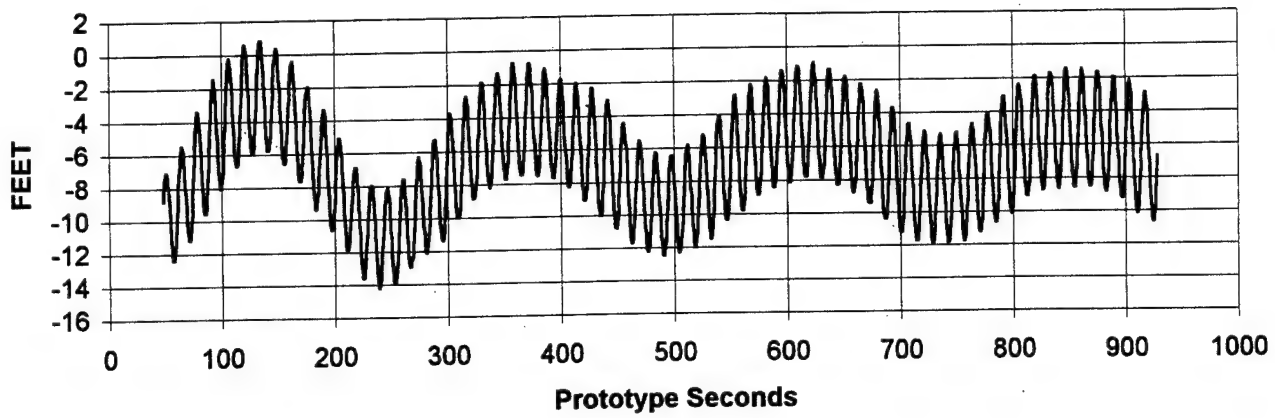


Filtered High Frequency Time History

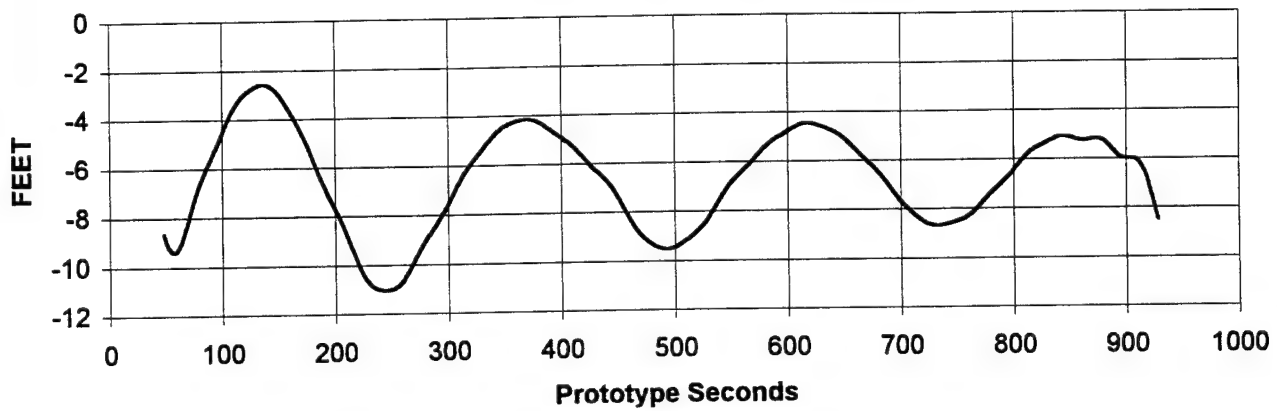


TEST A905 - PT SURGE

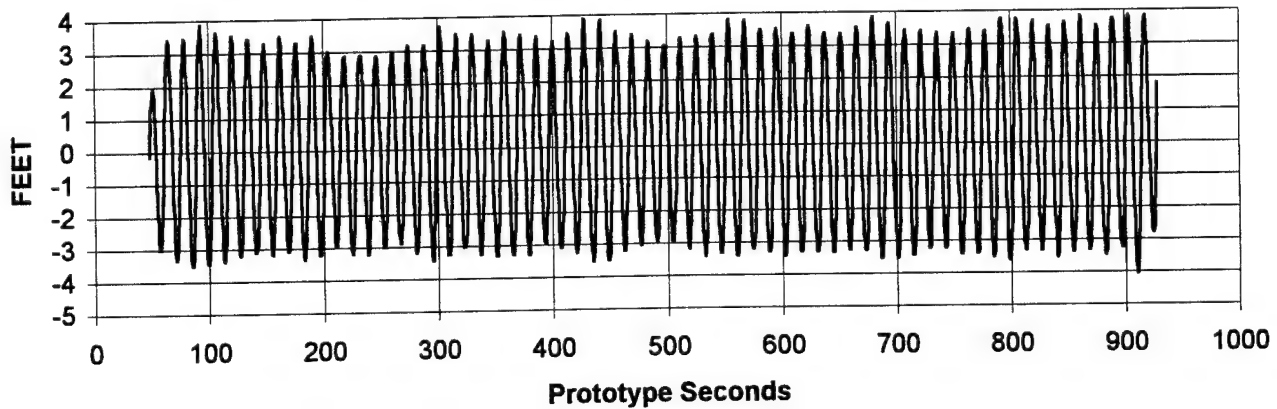
Unfiltered Time History



Filtered Low Frequency Time History

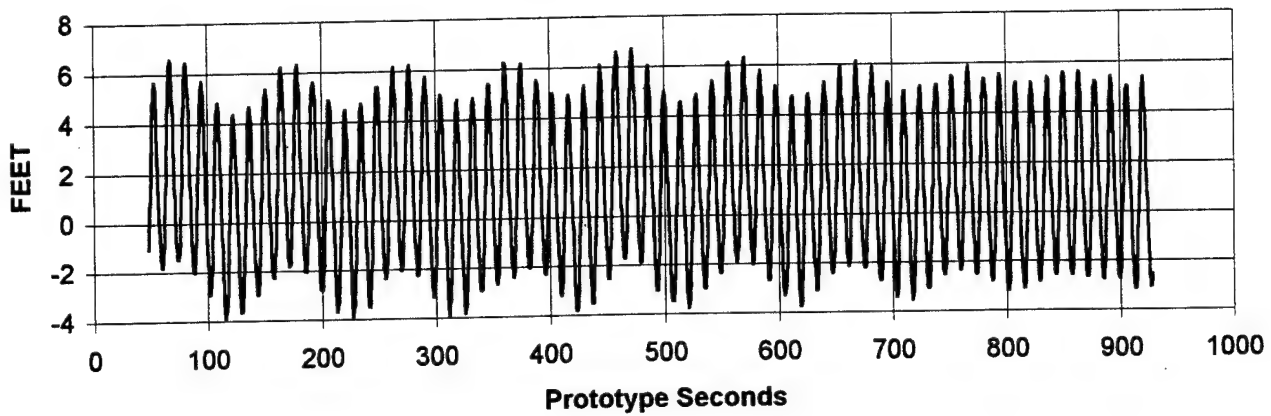


Filtered High Frequency Time History

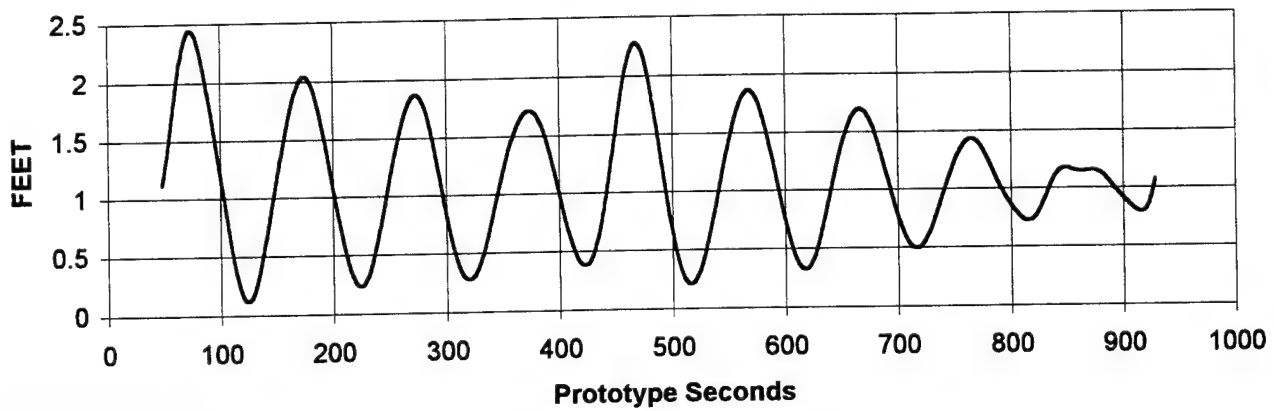


TEST A905 - PT HEAVE

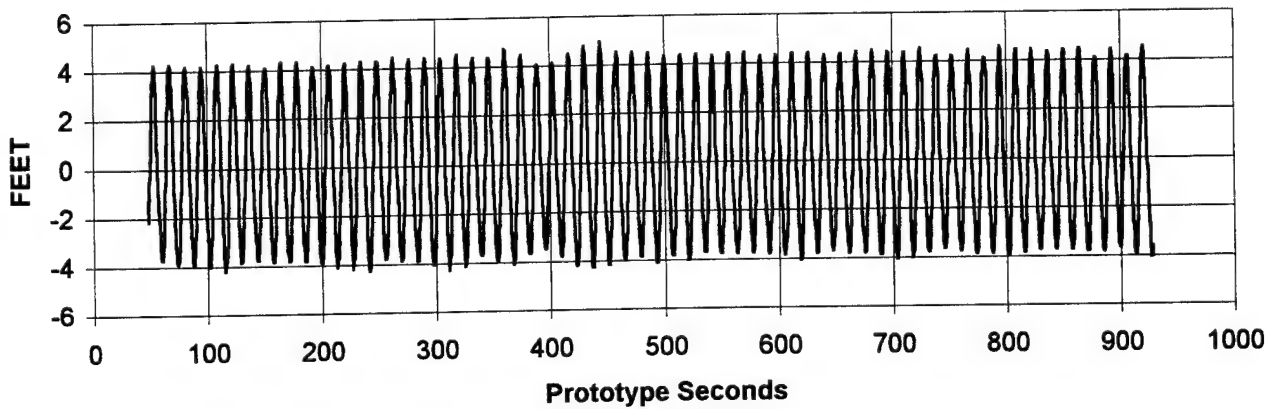
Unfiltered Time History



Filtered Low Frequency Time History

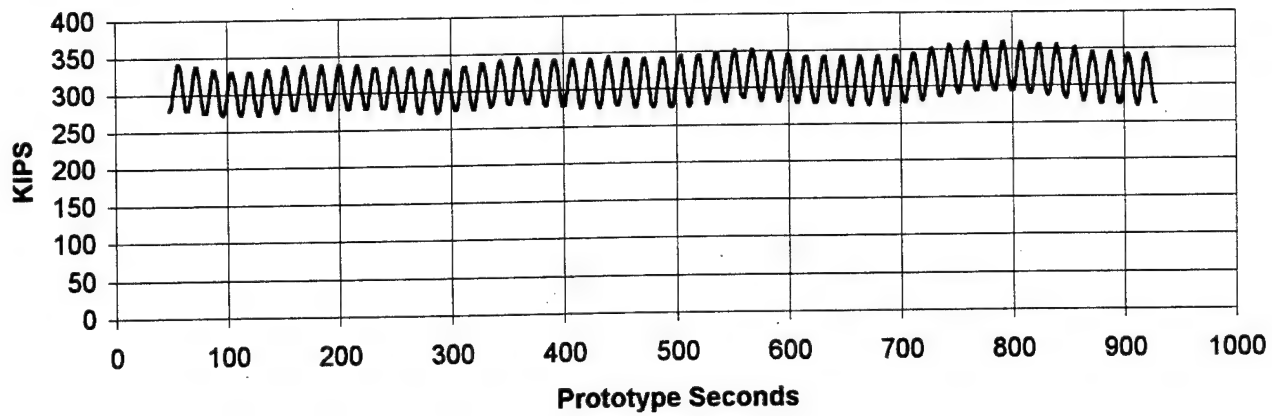


Filtered High Frequency Time History

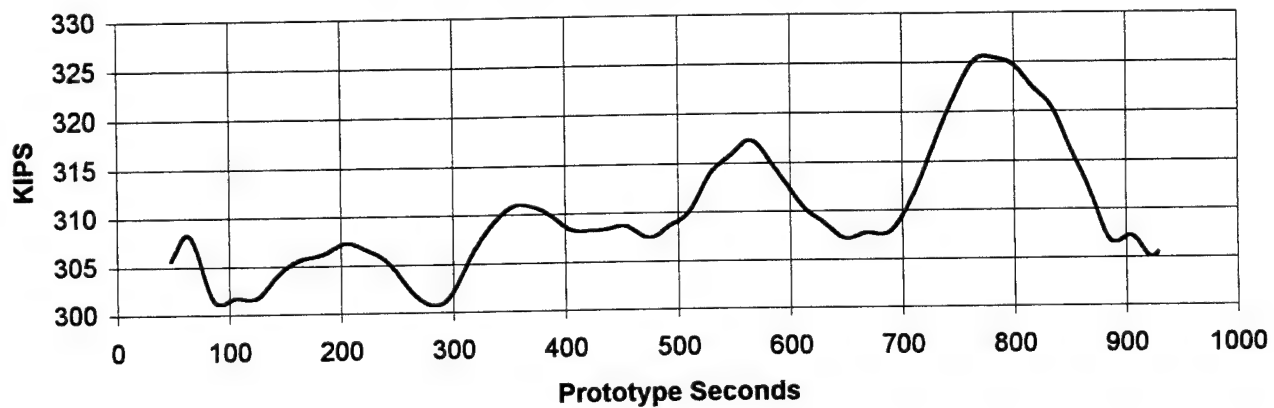


TEST A906 - ML_1 TENSION

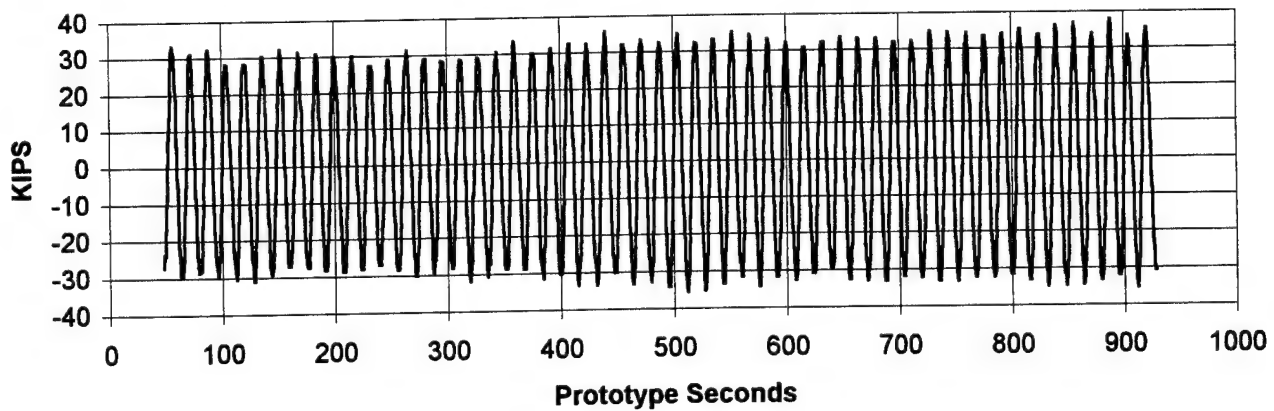
Unfiltered Time History



Filtered Low Frequency Time History

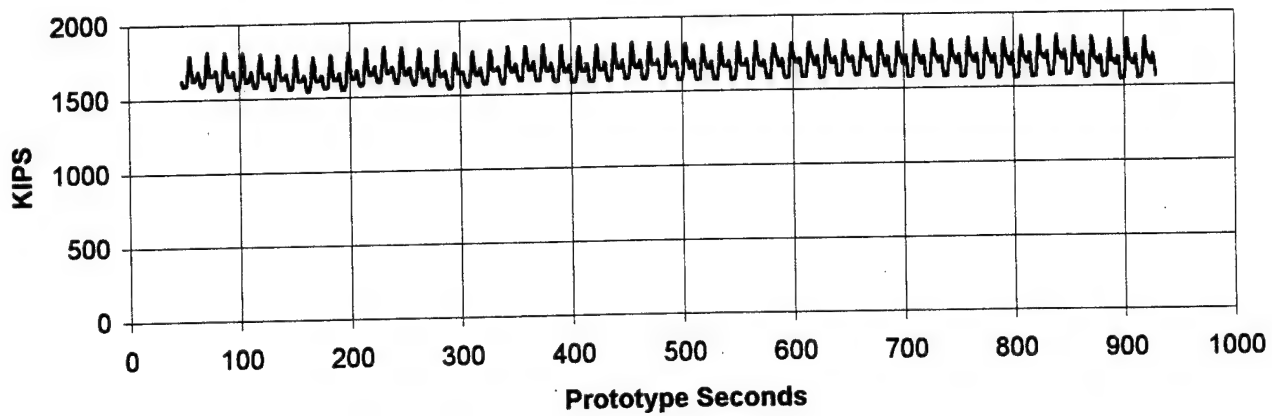


Filtered High Frequency Time History

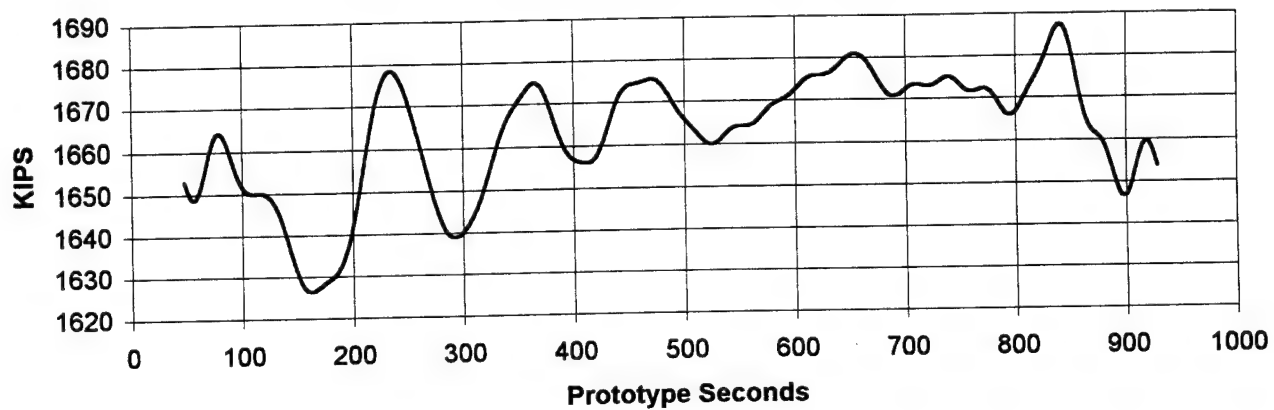


TEST A906 - BUOY 1 TENSION

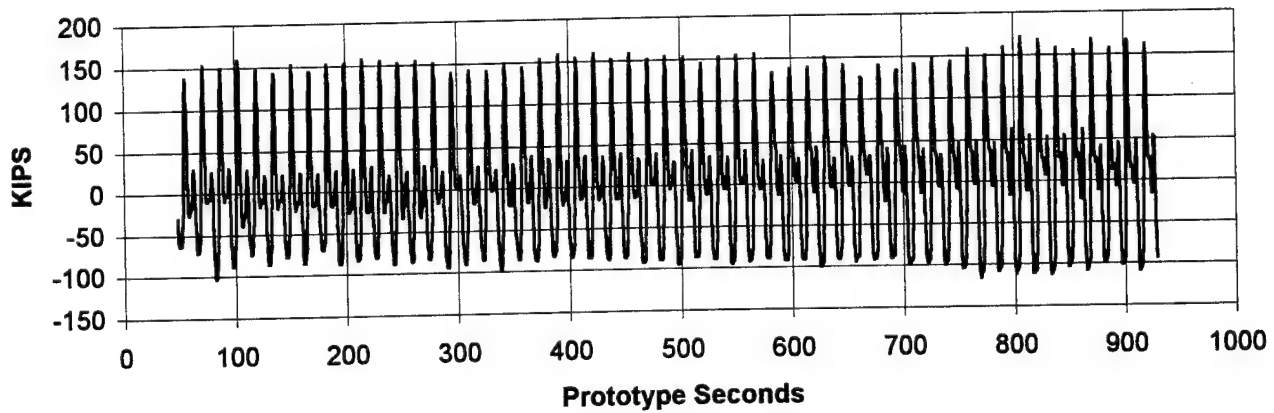
Unfiltered Time History



Filtered Low Frequency Time History

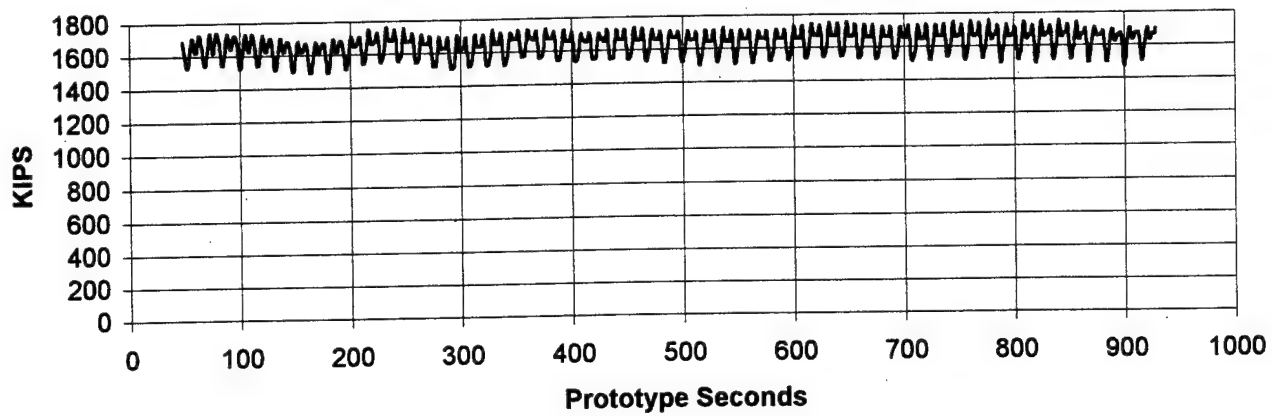


Filtered High Frequency Time History

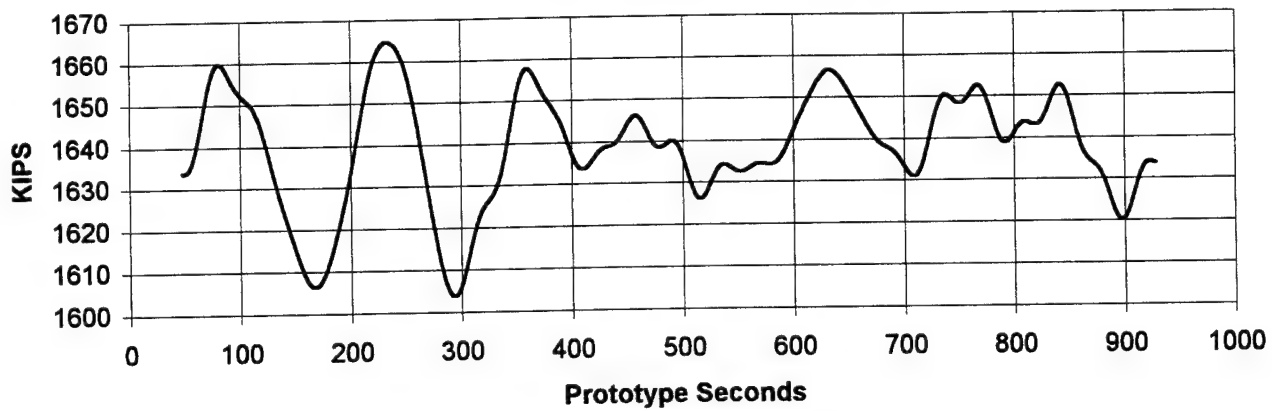


TEST A906 - BUOY 2 TENSION

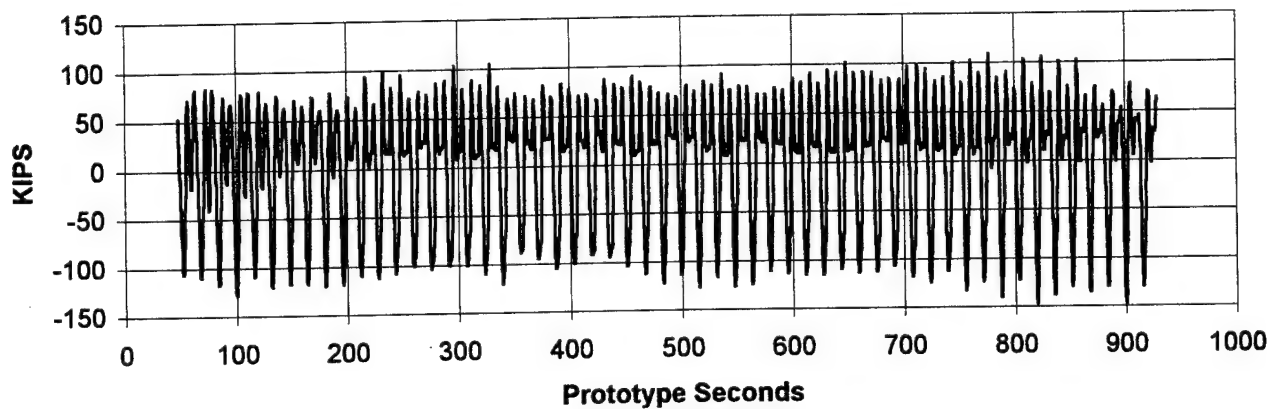
Unfiltered Time History



Filtered Low Frequency Time History

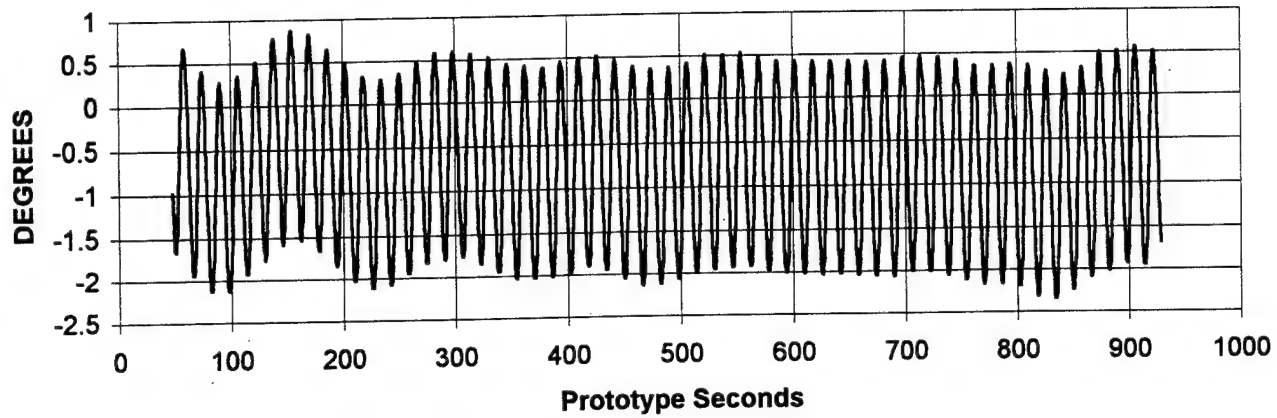


Filtered High Frequency Time History

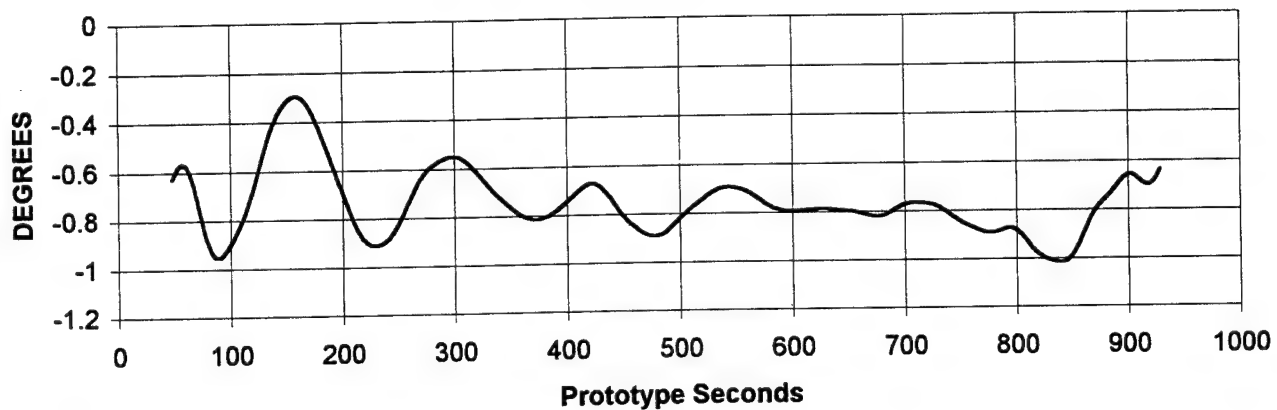


TEST A906 - PITCH

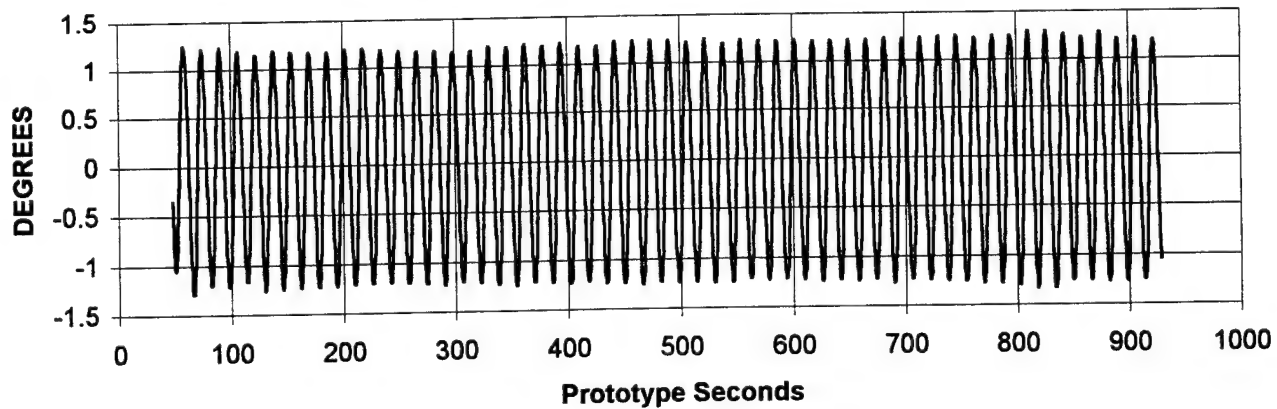
Unfiltered Time History



Filtered Low Frequency Time History

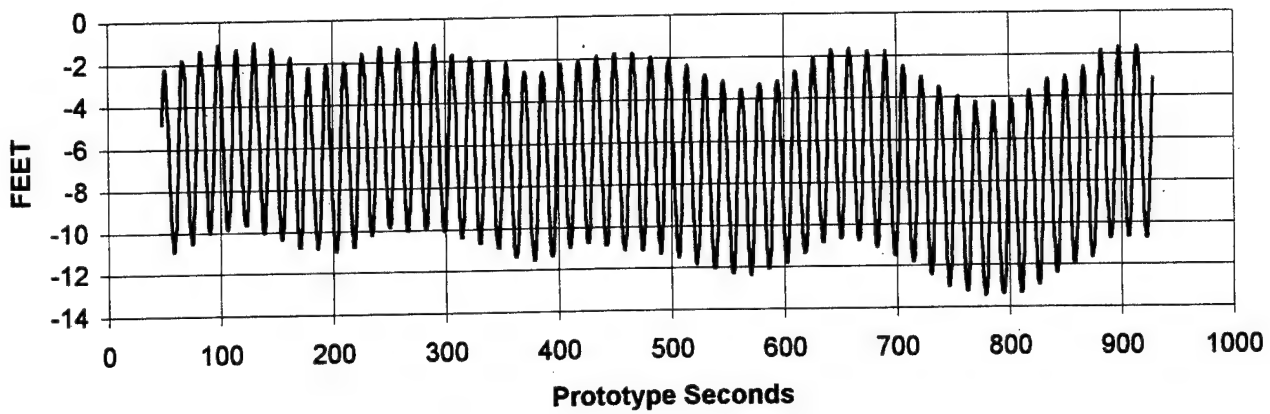


Filtered High Frequency Time History

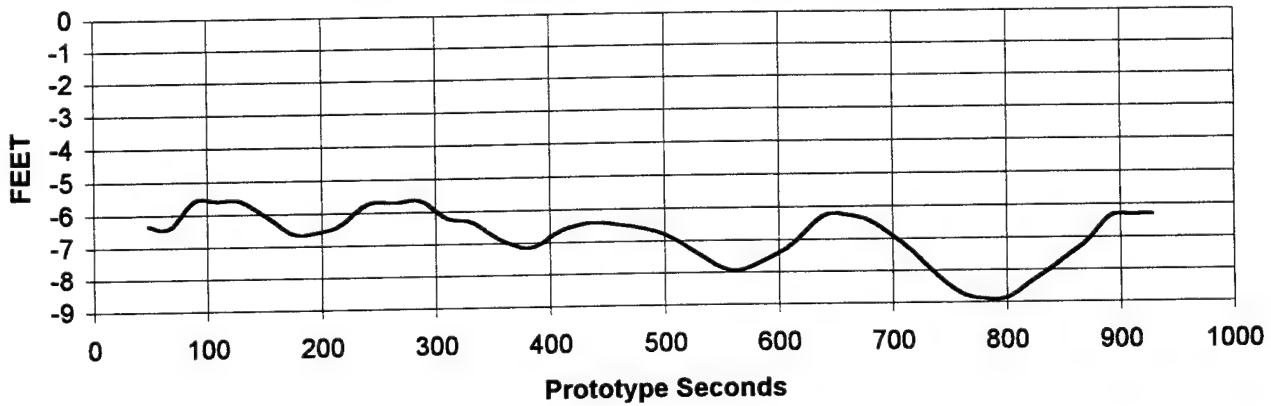


TEST A906 - PT SURGE

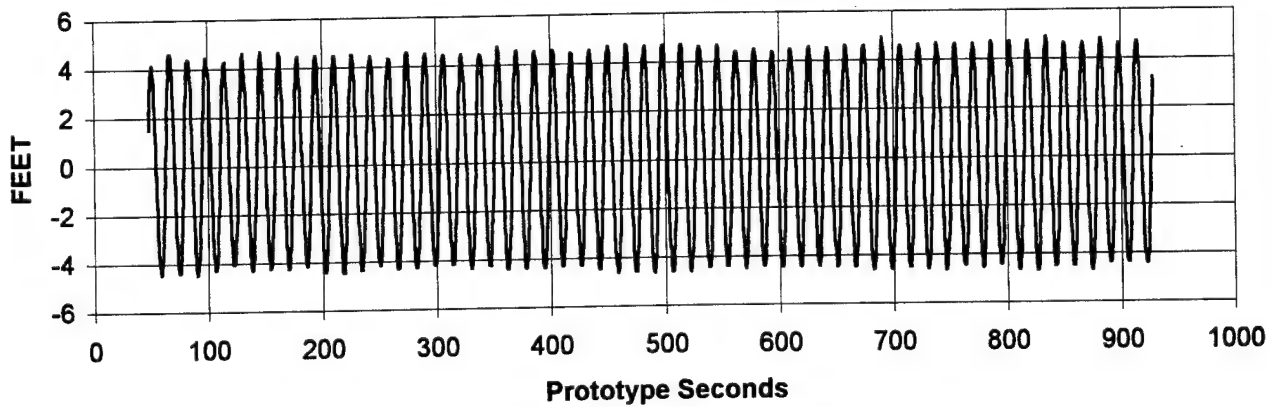
Unfiltered Time History



Filtered Low Frequency Time History

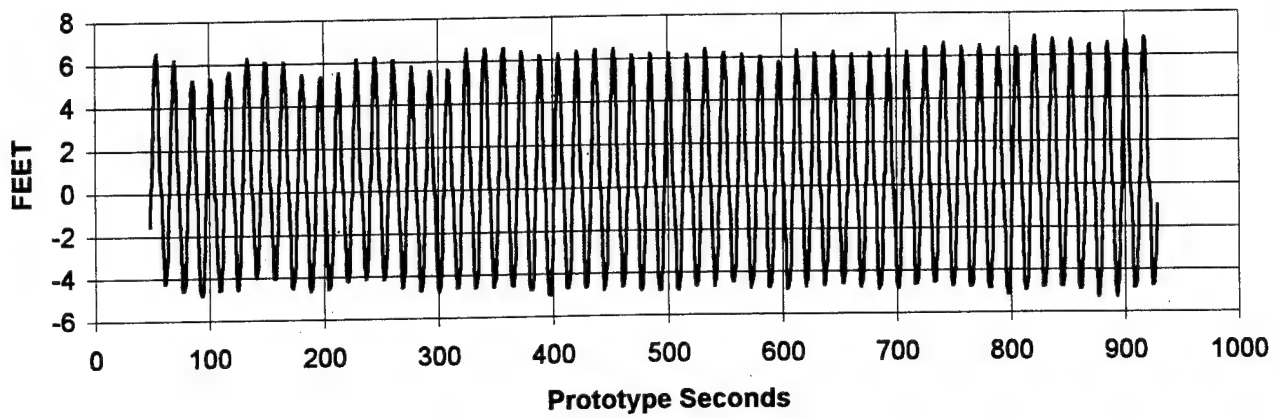


Filtered High Frequency Time History

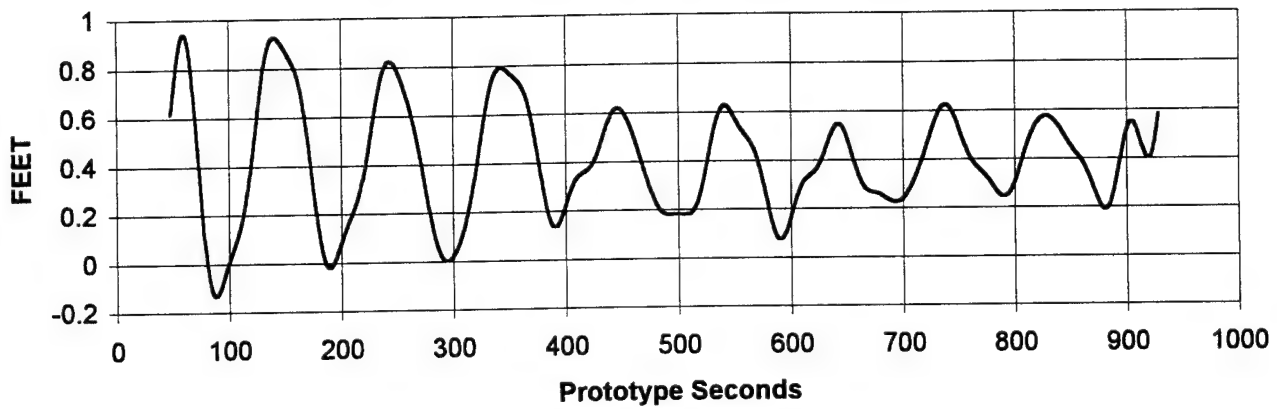


TEST A906 - PT HEAVE

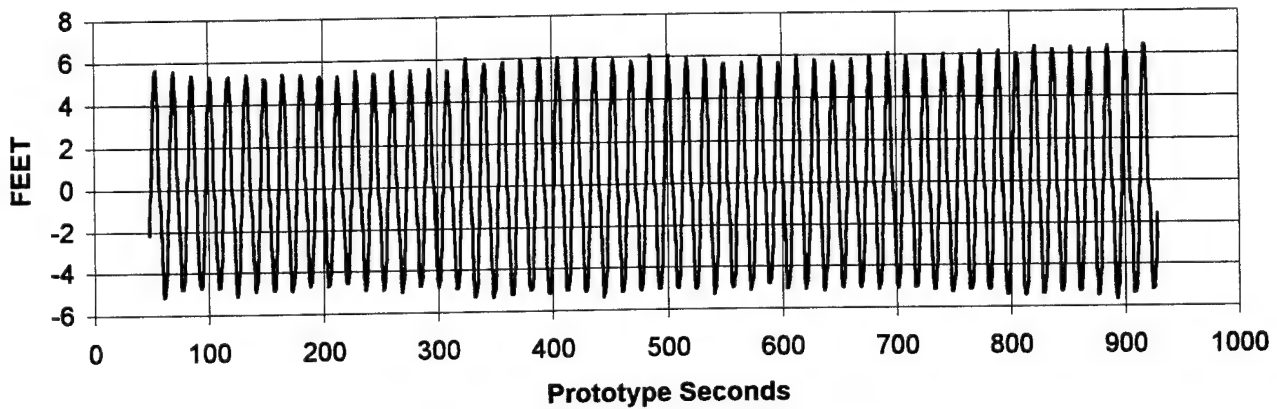
Unfiltered Time History



Filtered Low Frequency Time History

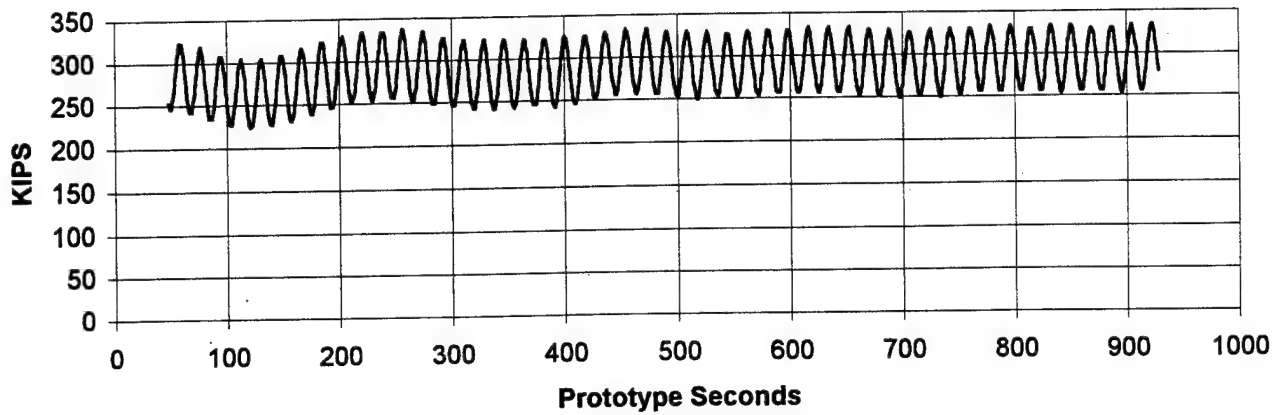


Filtered High Frequency Time History

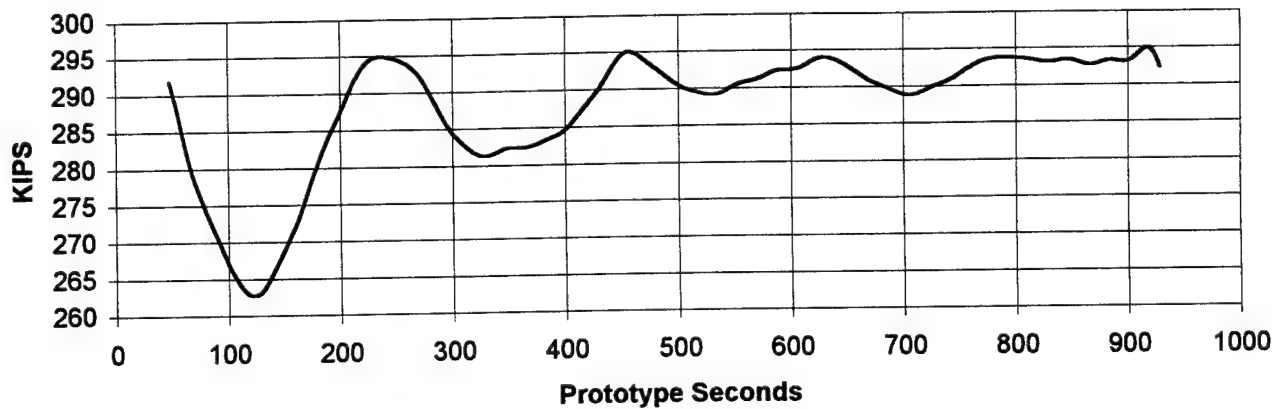


TEST A907 - ML_1 TENSION

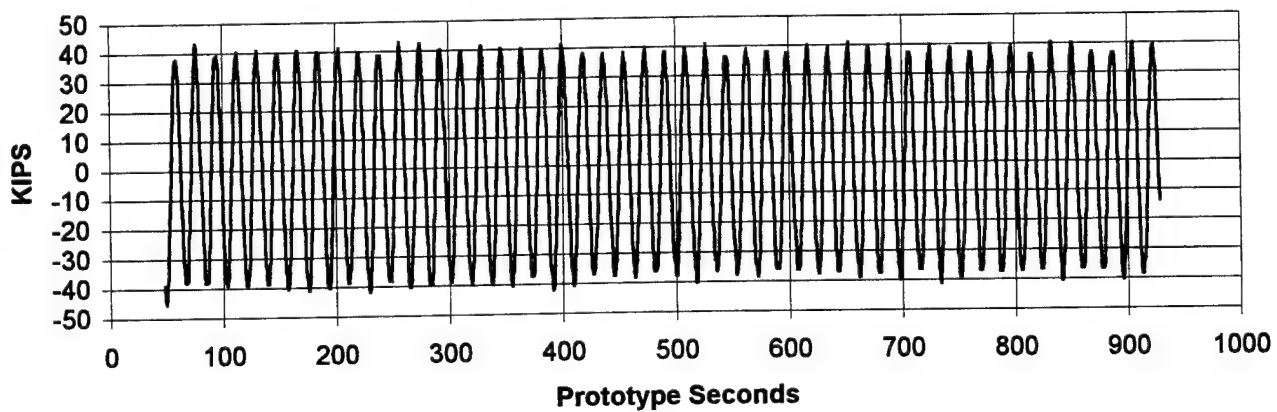
Unfiltered Time History



Filtered Low Frequency Time History

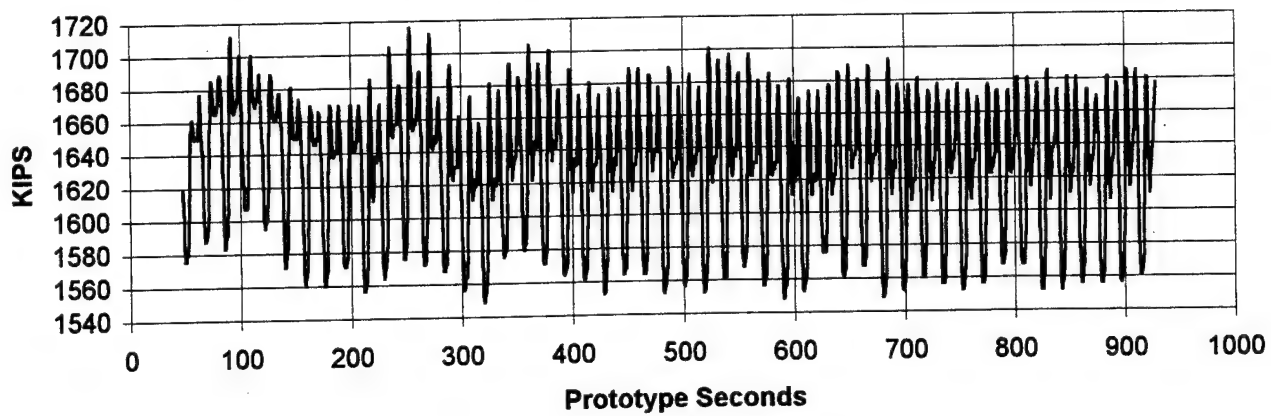


Filtered High Frequency Time History

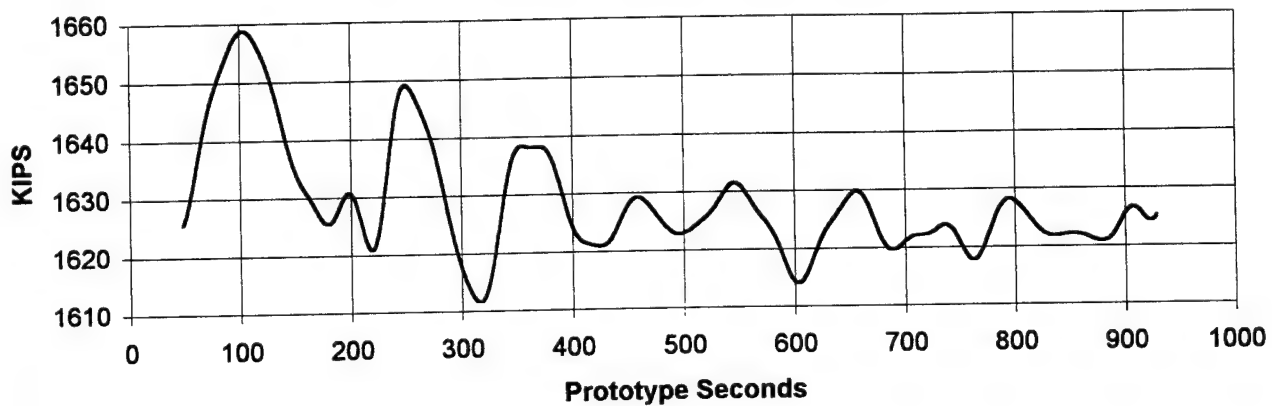


TEST A907 - BUOY 1 TENSION

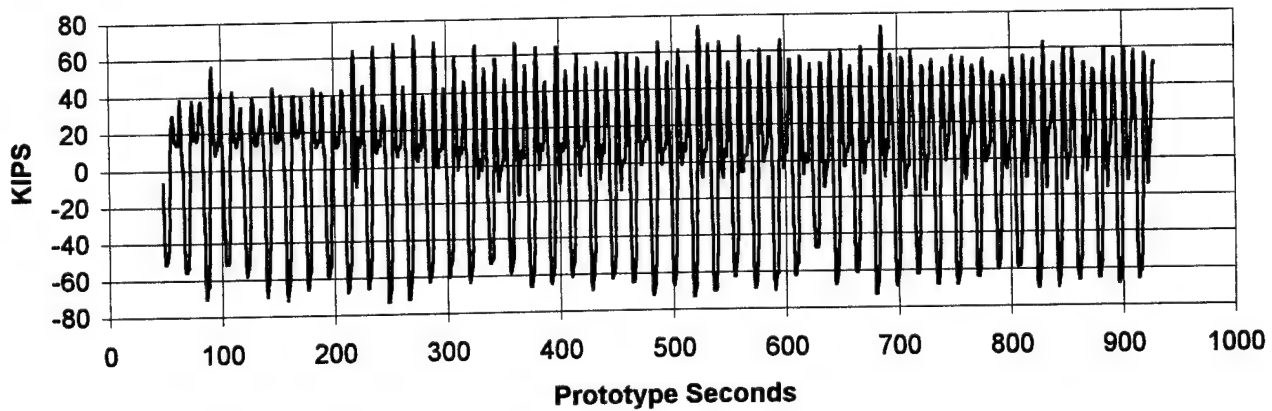
Unfiltered Time History



Filtered Low Frequency Time History

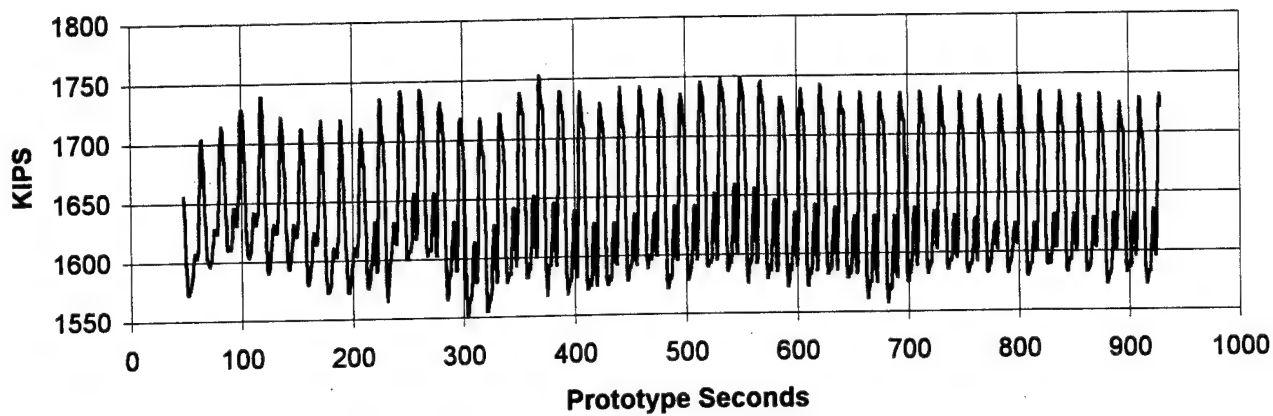


Filtered High Frequency Time History

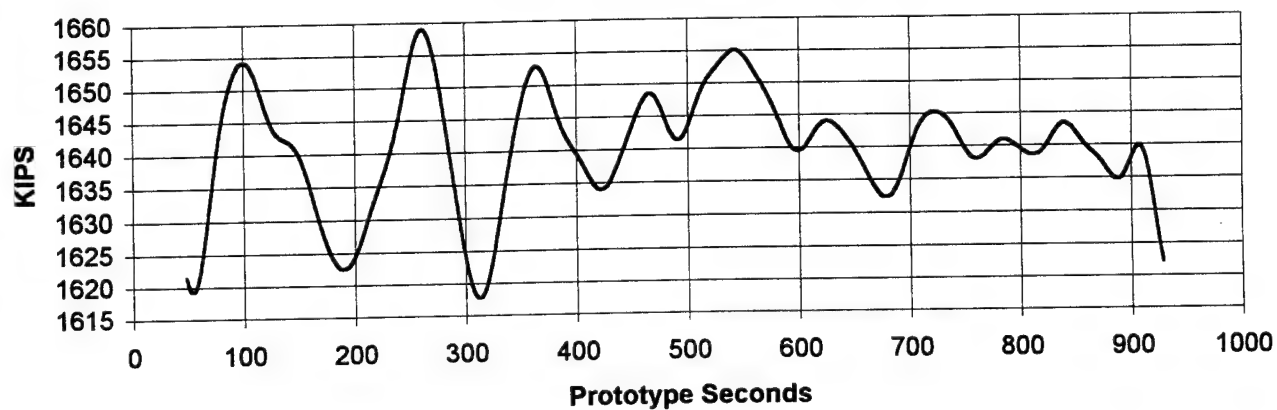


TEST A907 - BUOY 2 TENSION

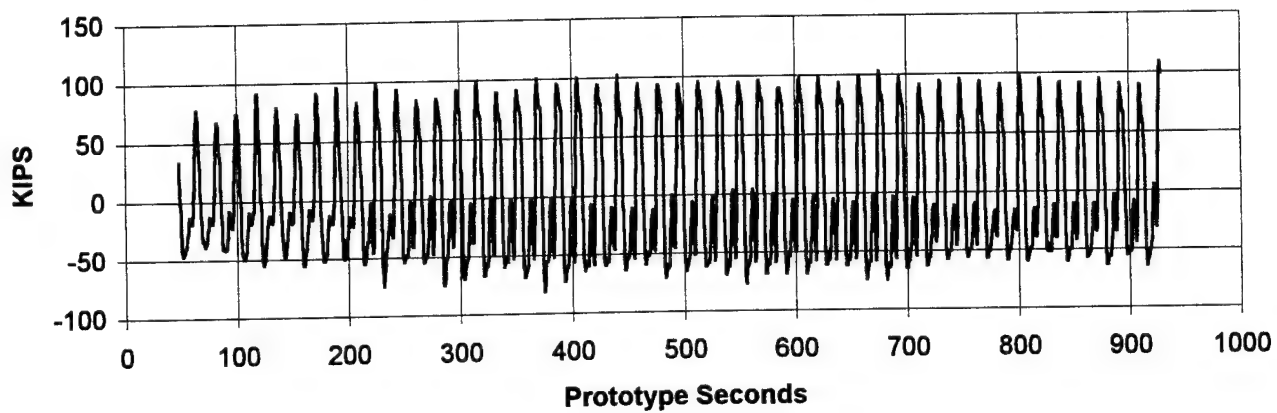
Unfiltered Time History



Filtered Low Frequency Time History

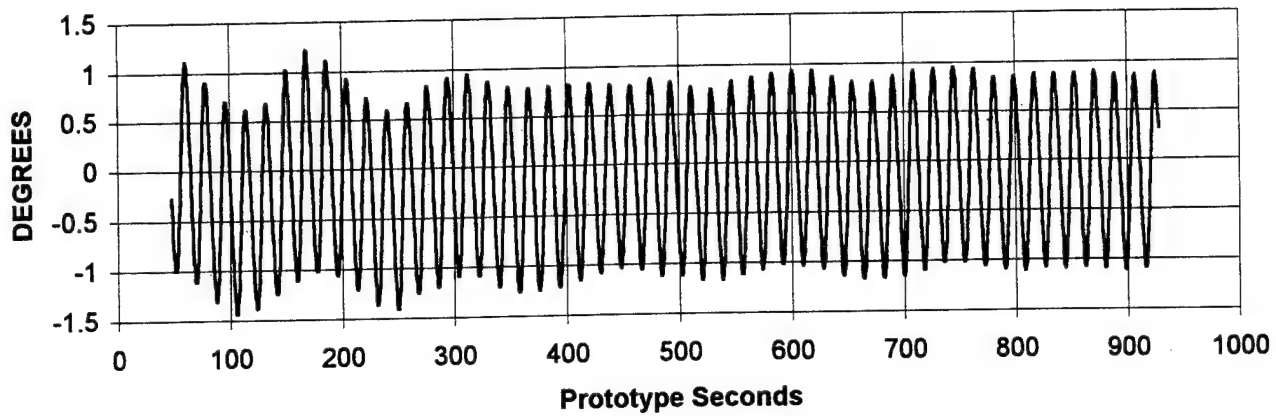


Filtered High Frequency Time History

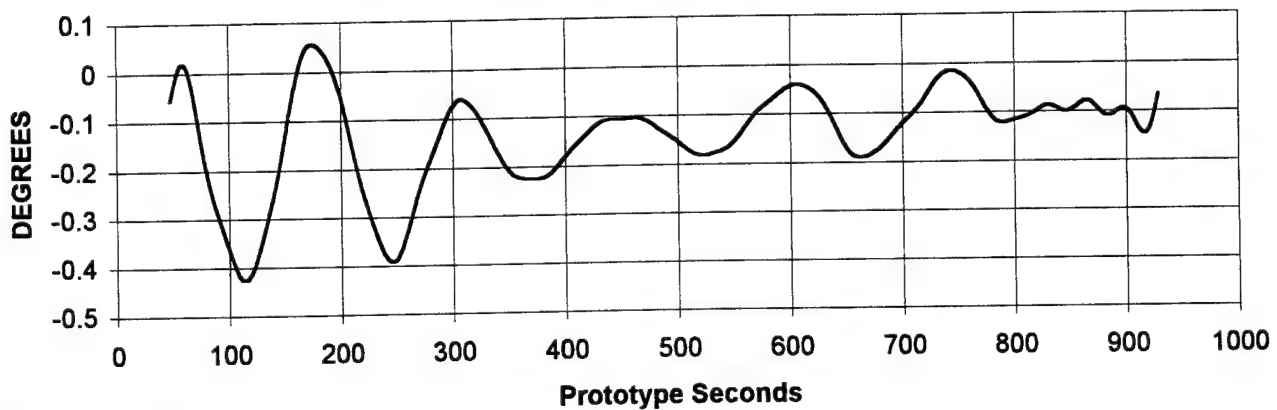


TEST A907 - PITCH

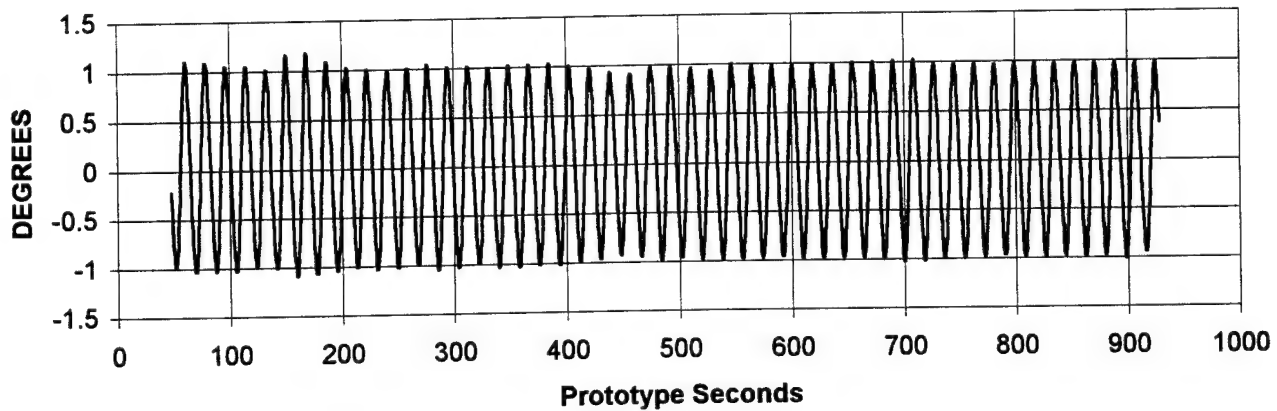
Unfiltered Time History



Filtered Low Frequency Time History

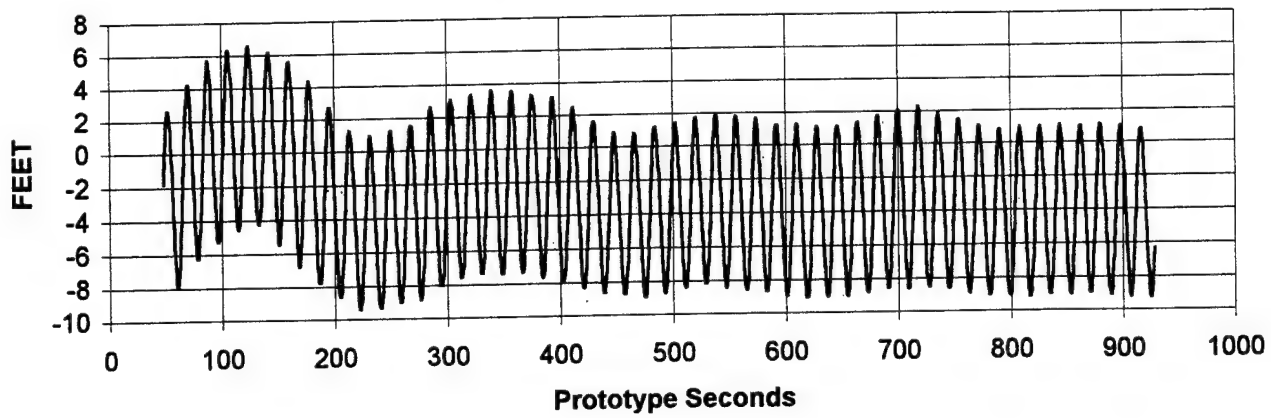


Filtered High Frequency Time History

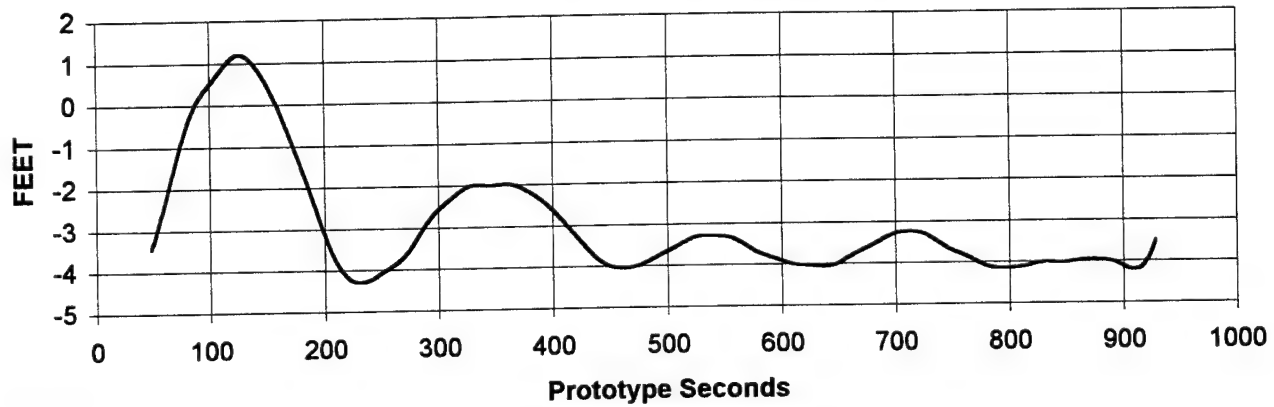


TEST A907 - PT SURGE

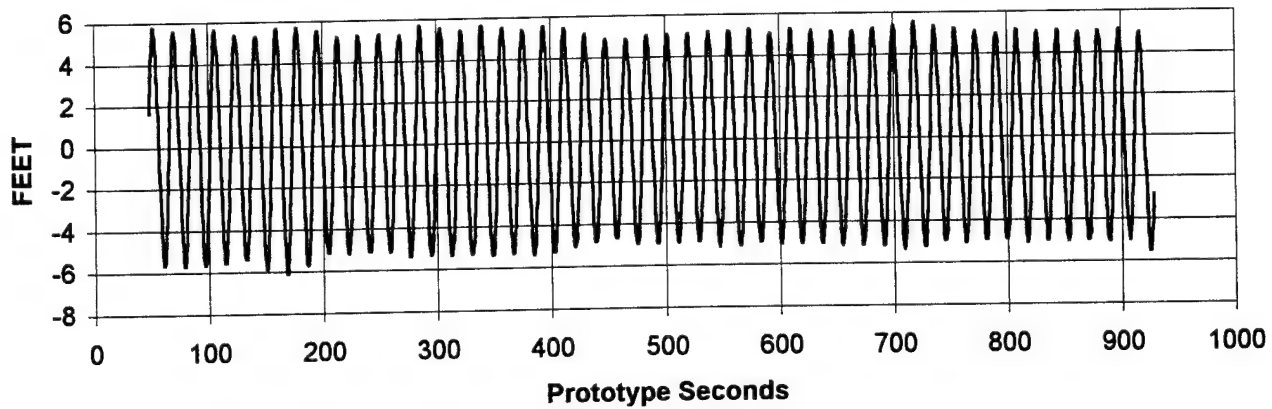
Unfiltered Time History



Filtered Low Frequency Time History

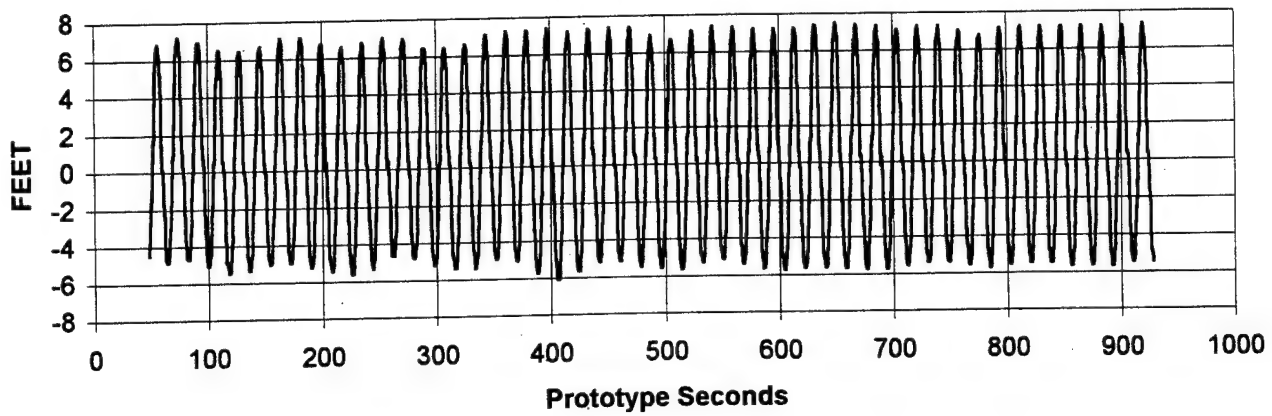


Filtered High Frequency Time History

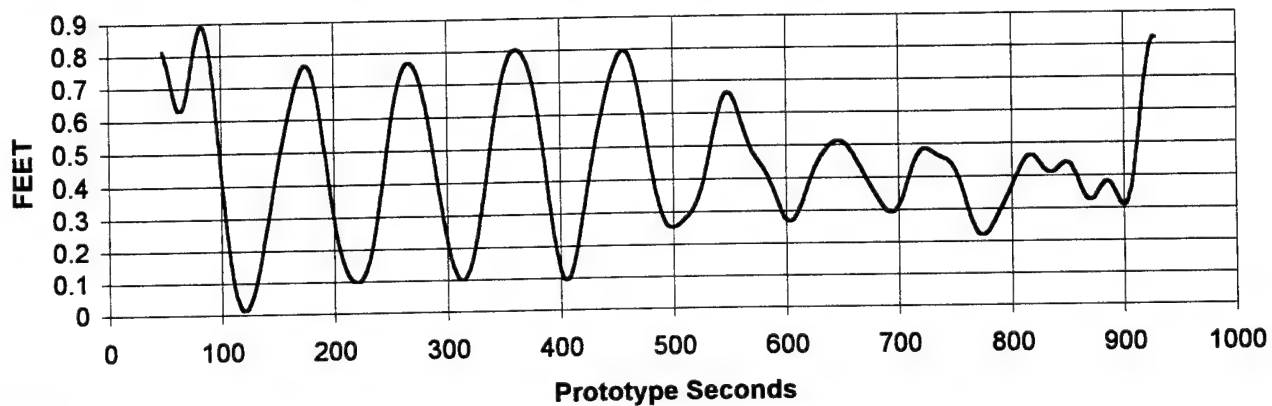


TEST A907 - PT HEAVE

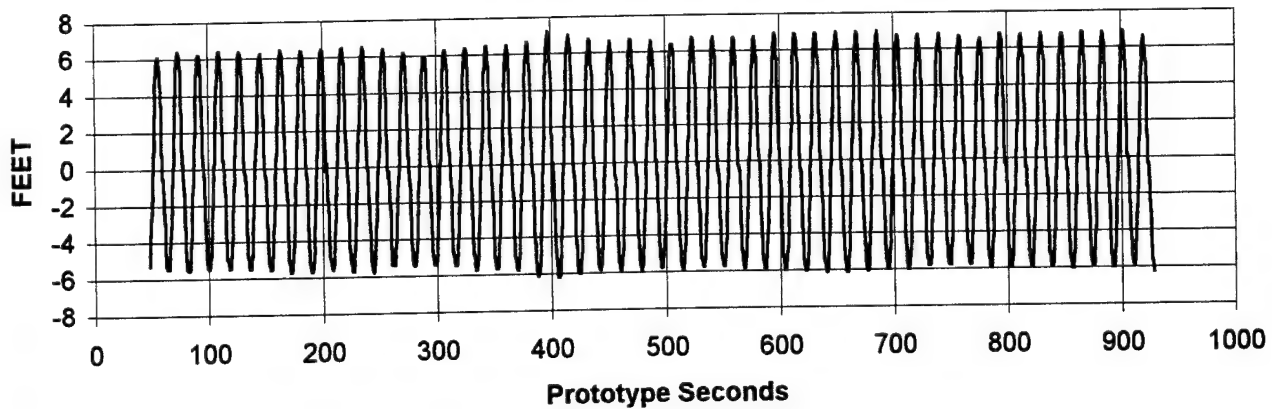
Unfiltered Time History



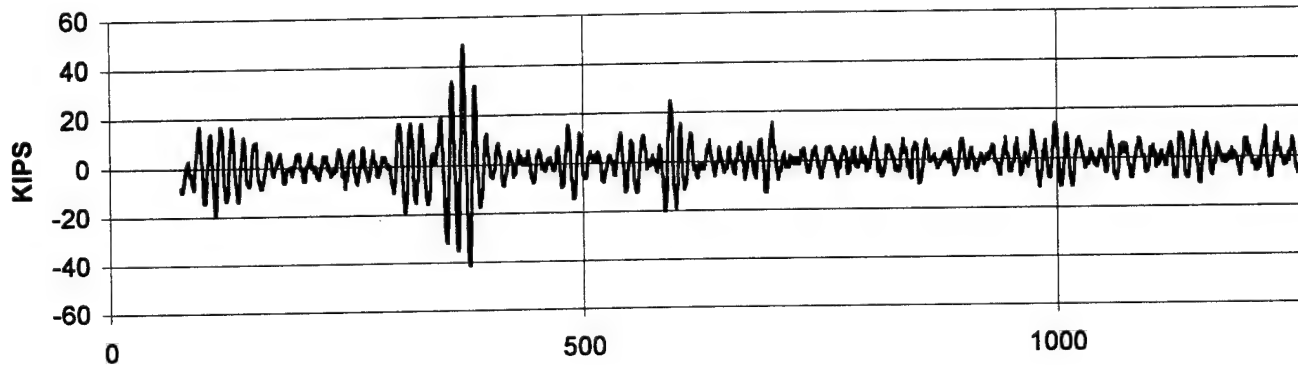
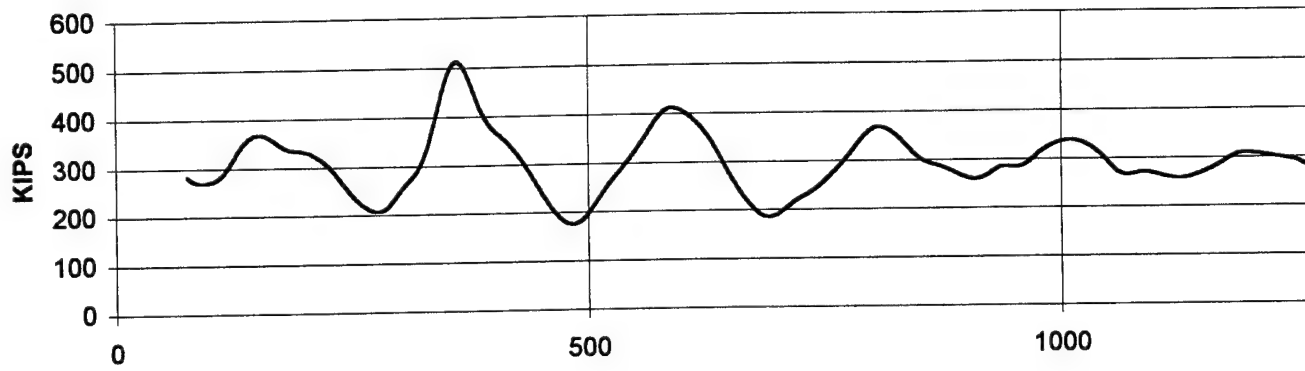
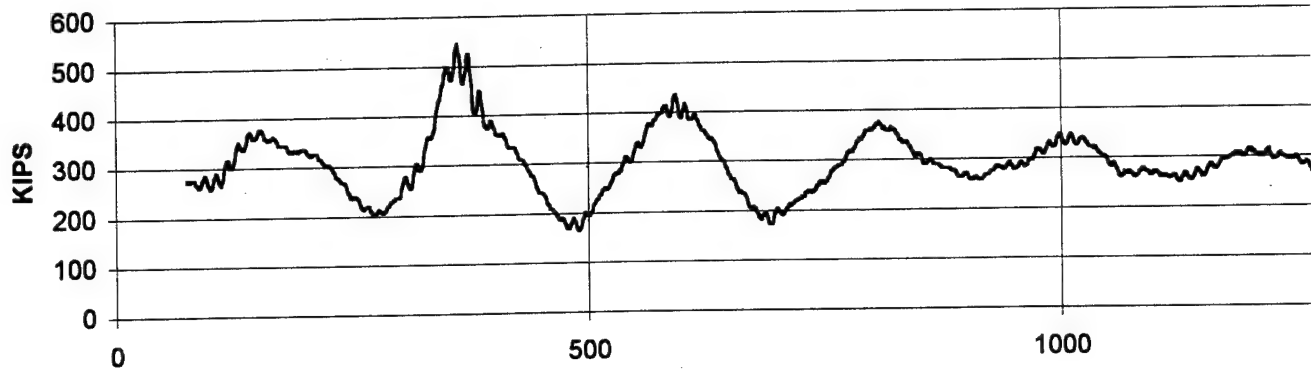
Filtered Low Frequency Time History



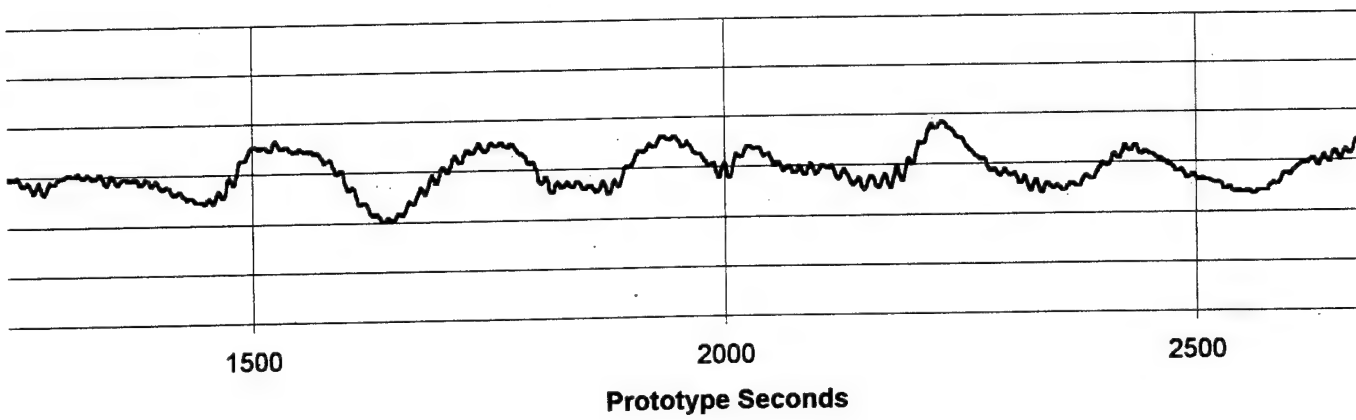
Filtered High Frequency Time History



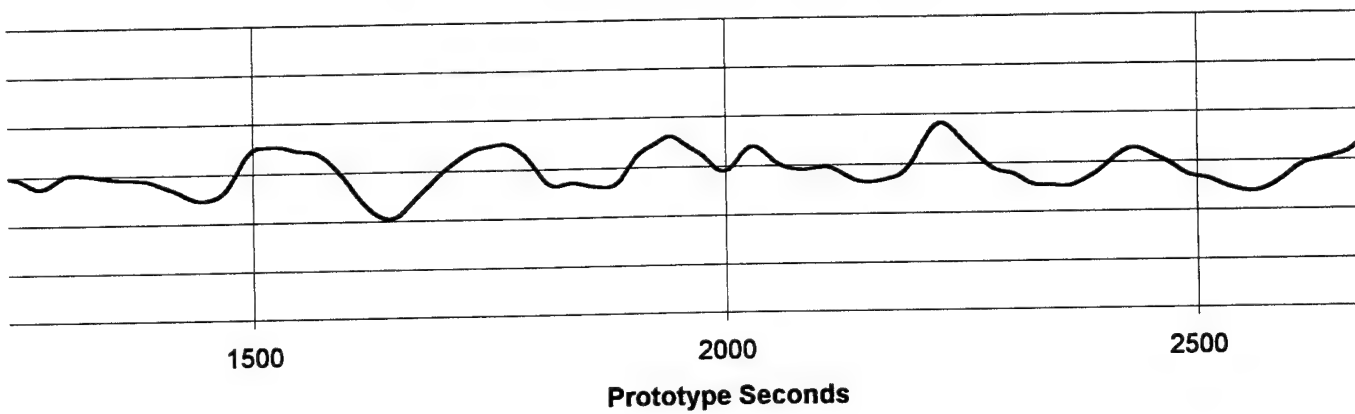
TEST A908 - ML_1 TENSION



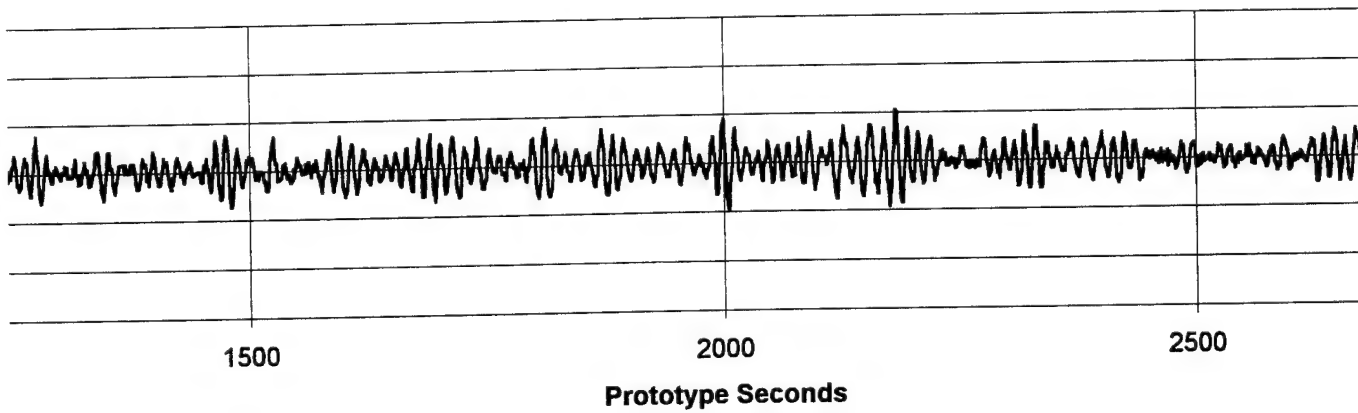
Unfiltered Time History



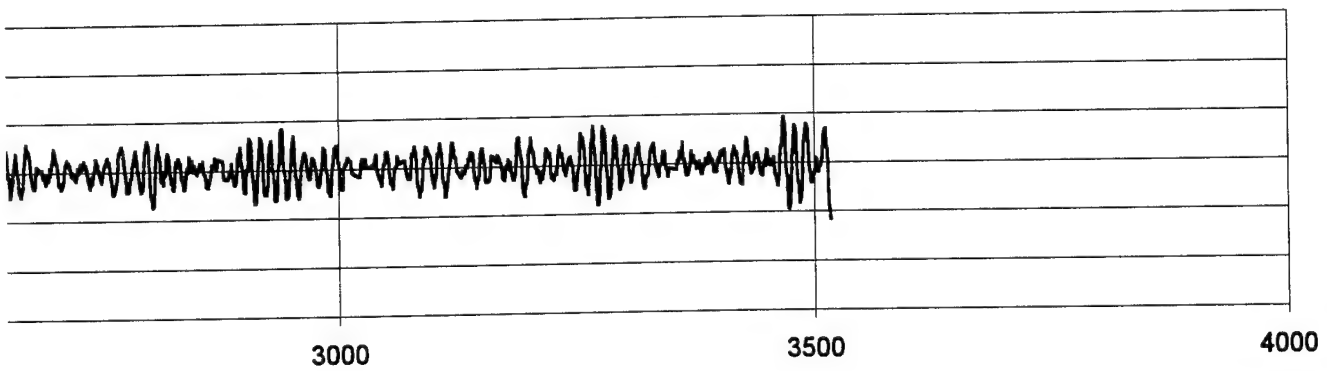
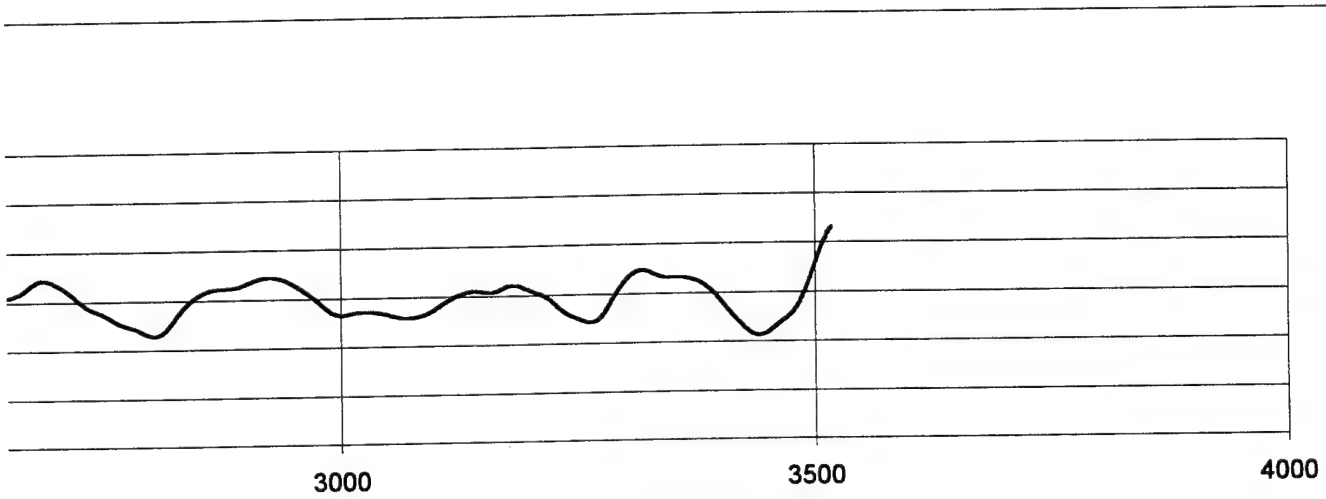
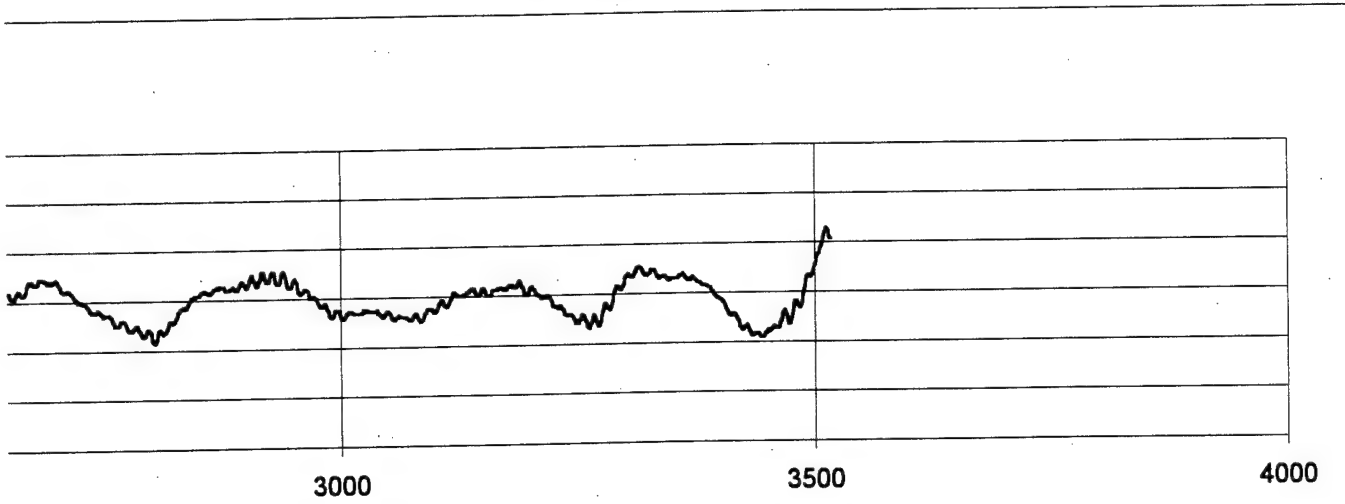
Filtered Low Frequency Time History



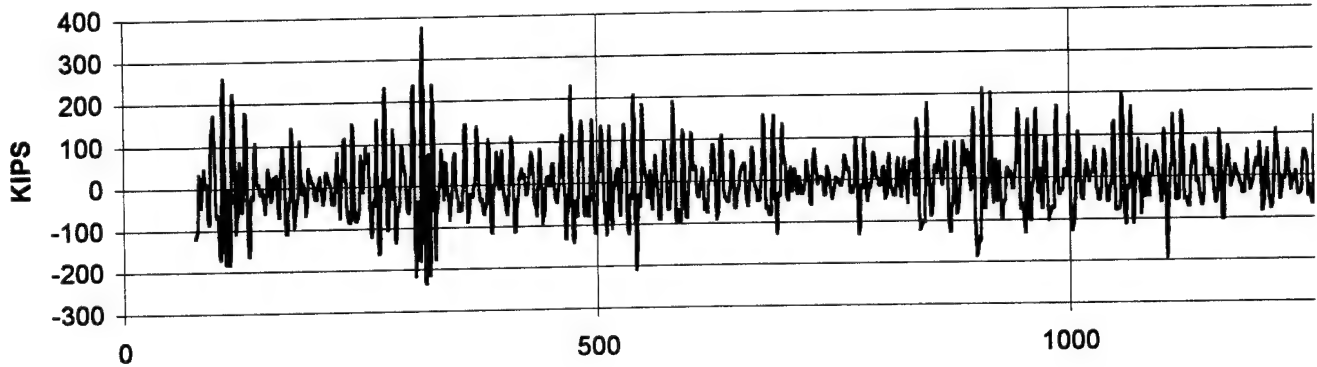
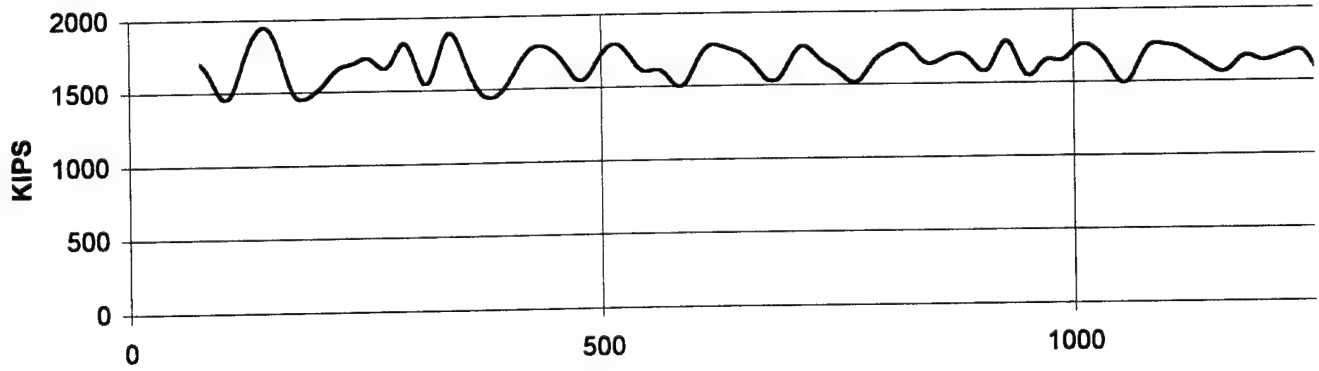
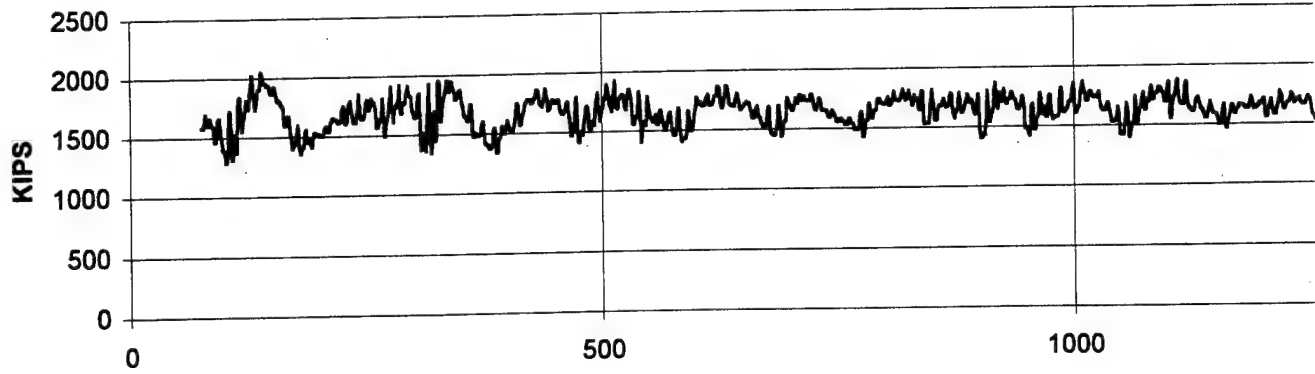
Filtered High Frequency Time History



TEST A908 - ML_1 TENSION

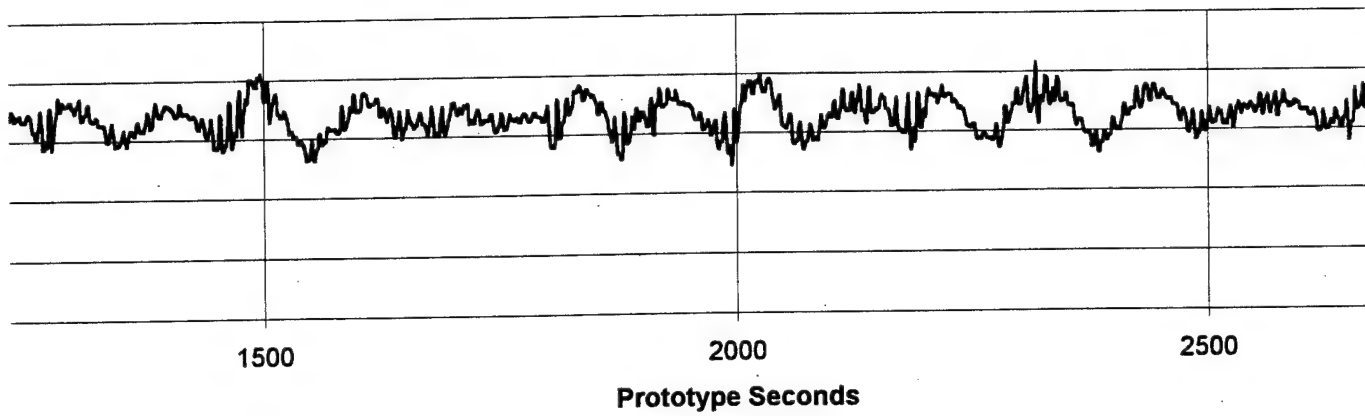


TEST A908 - BUOY 1 TENSION

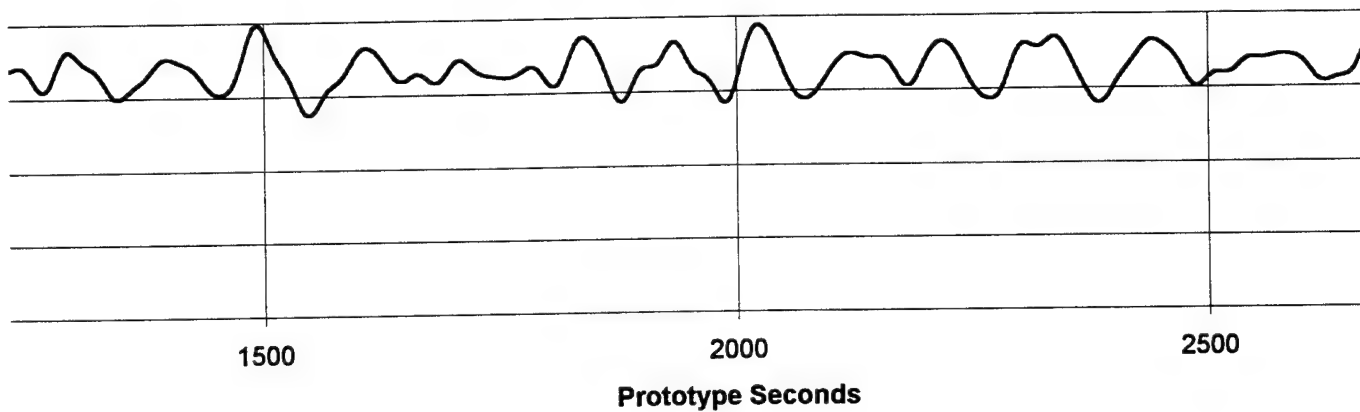


TEST A908 - BUOY 1 TENSION

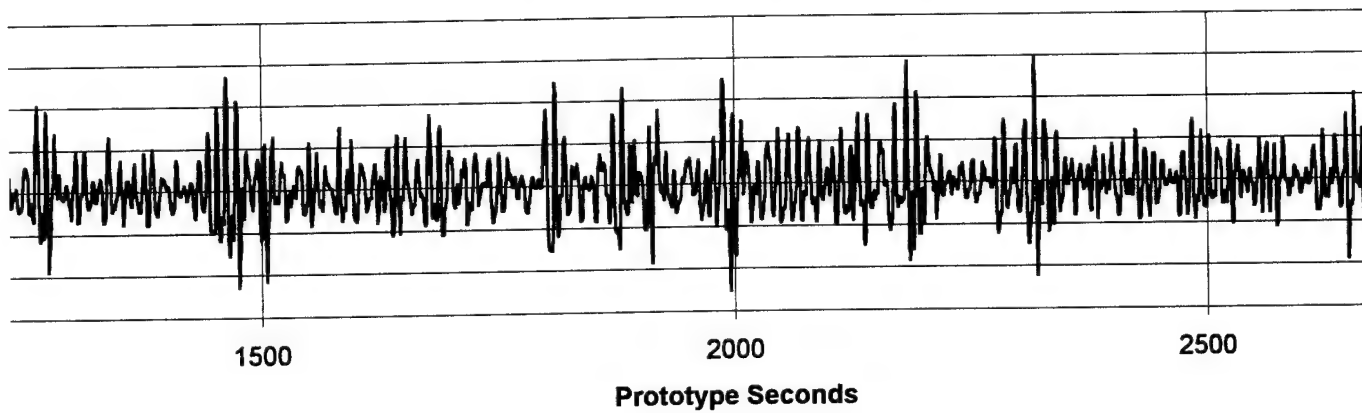
Unfiltered Time History



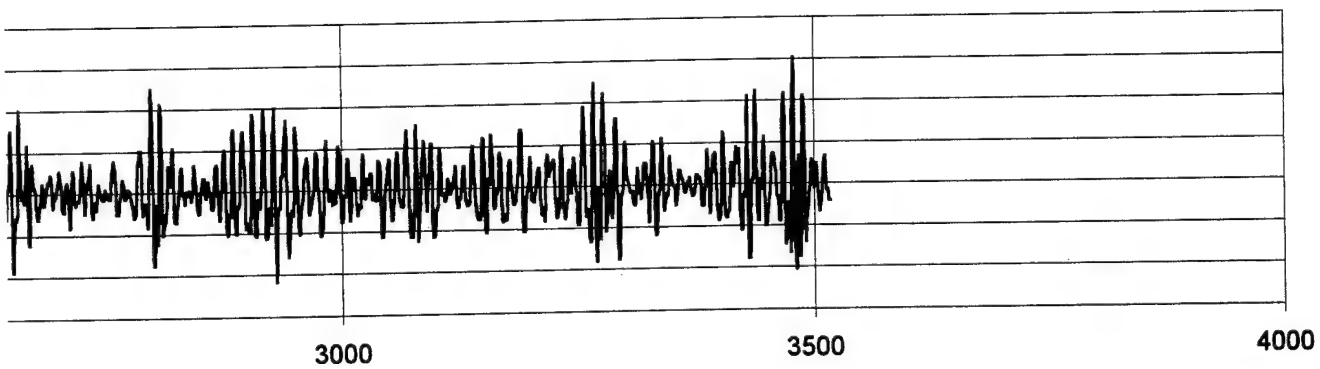
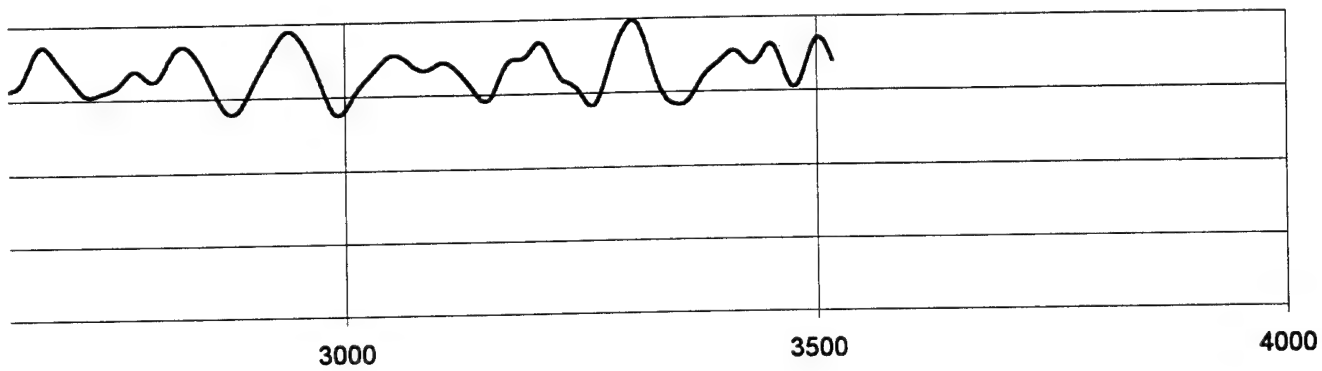
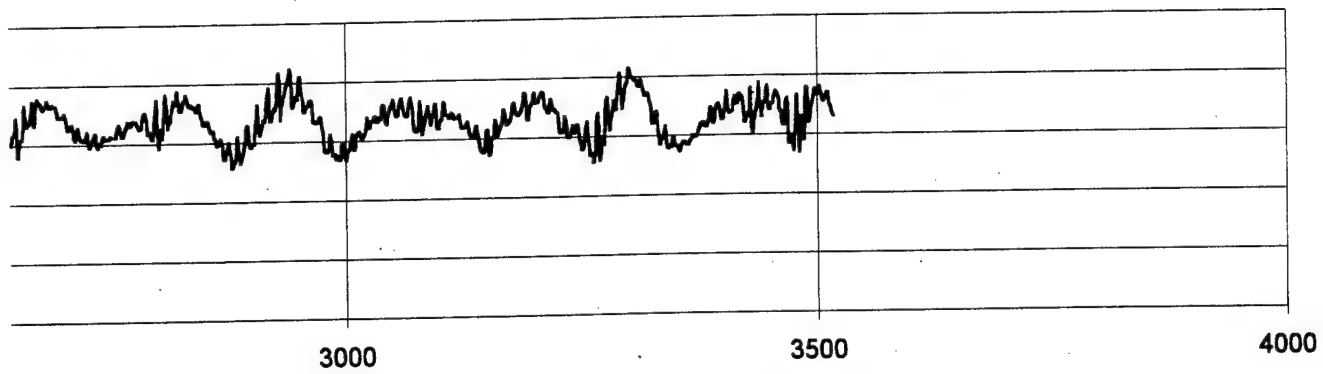
Filtered Low Frequency Time History



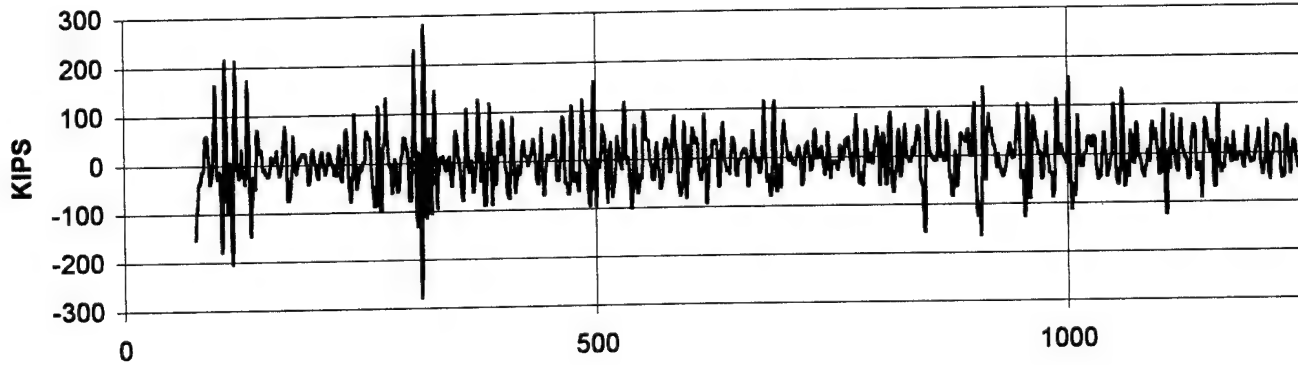
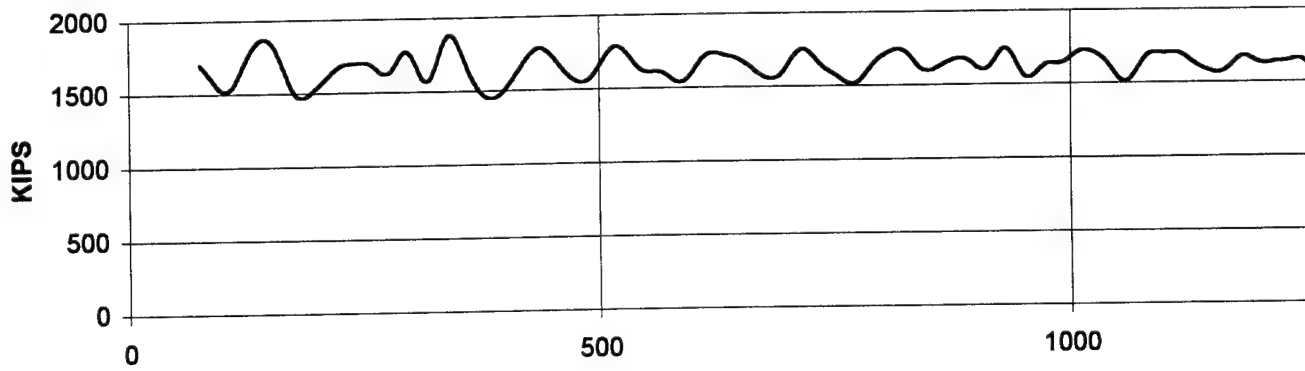
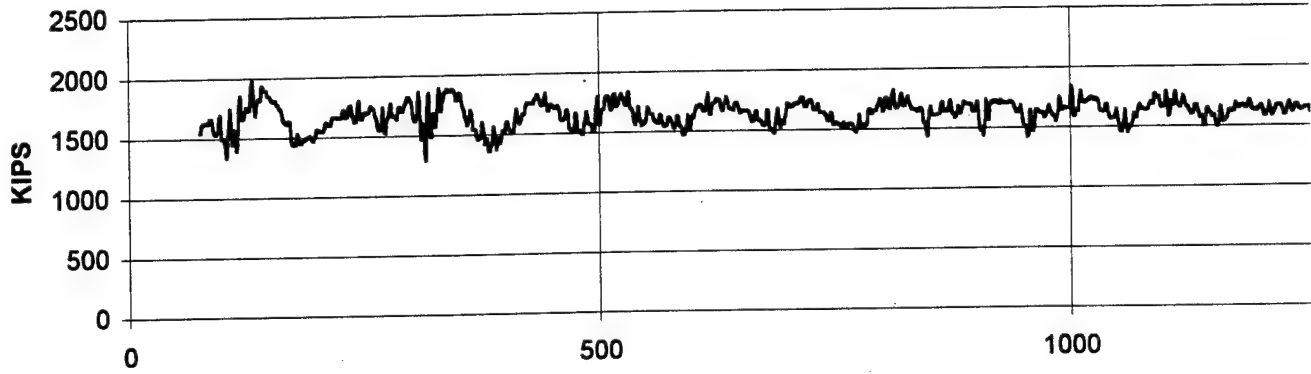
Filtered High Frequency Time History



TEST A908 - BUOY 1 TENSION

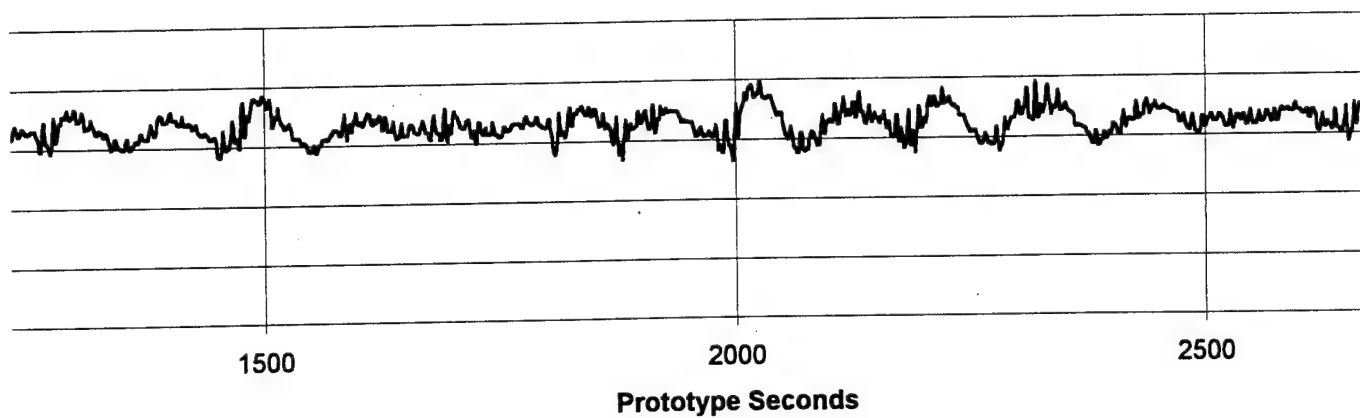


TEST A908 - BUOY 2 TENSION

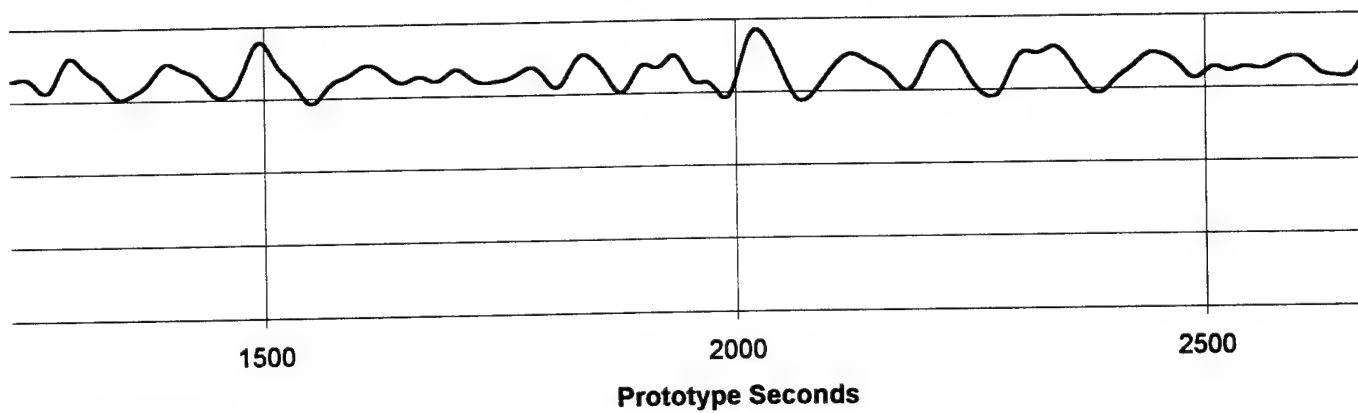


TEST A908 - BUOY 2 TENSION

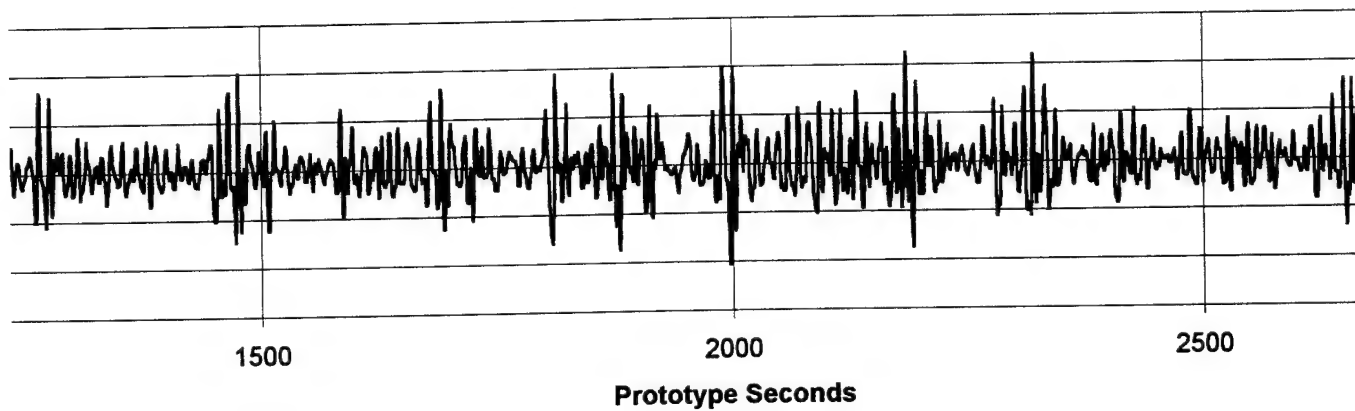
Unfiltered Time History



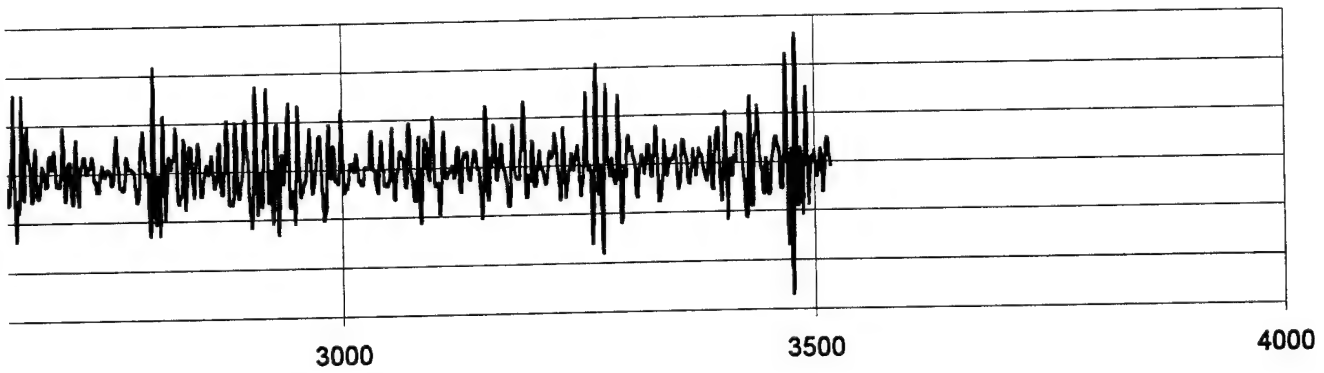
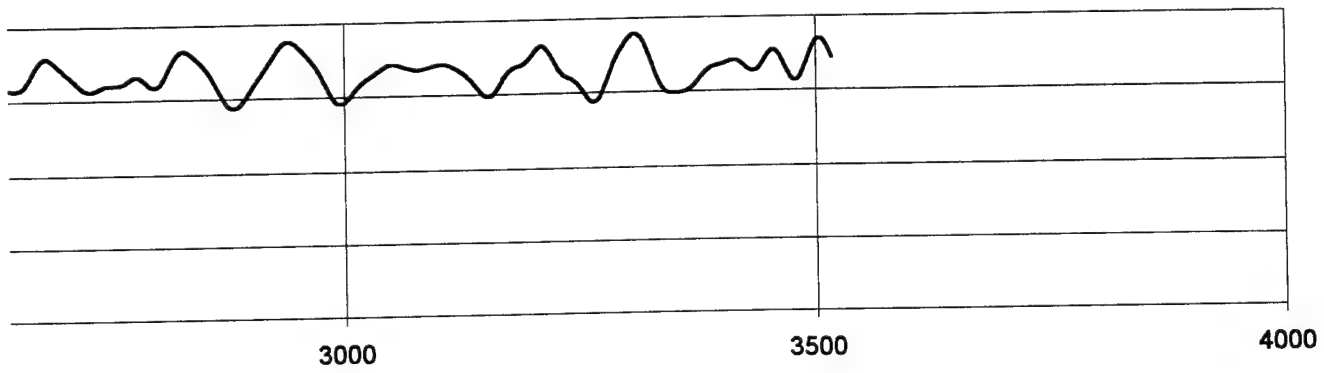
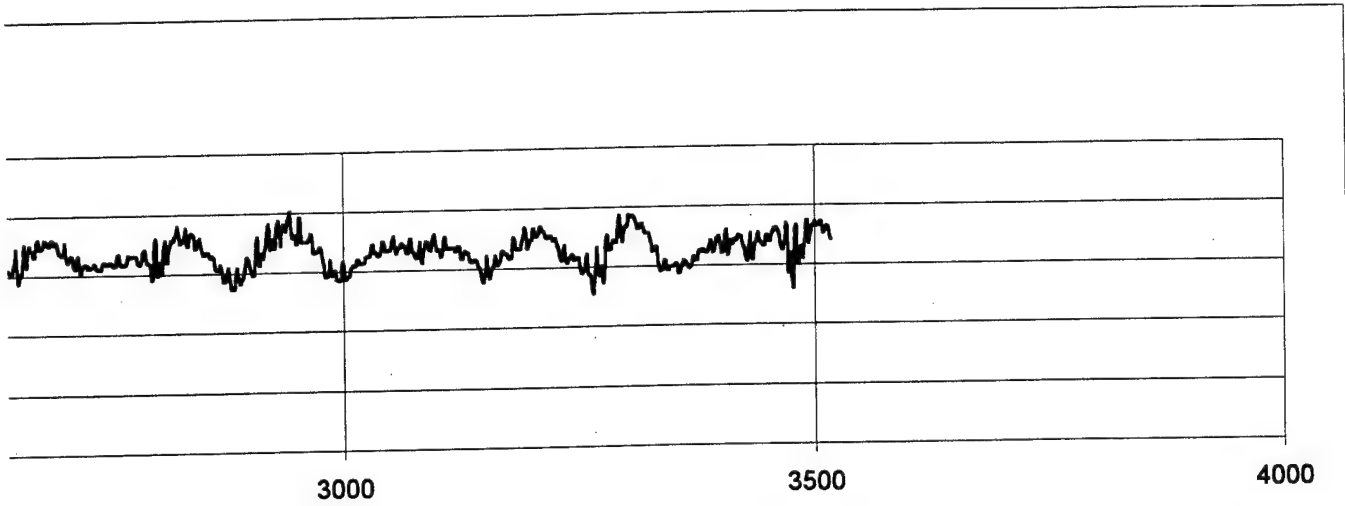
Filtered Low Frequency Time History



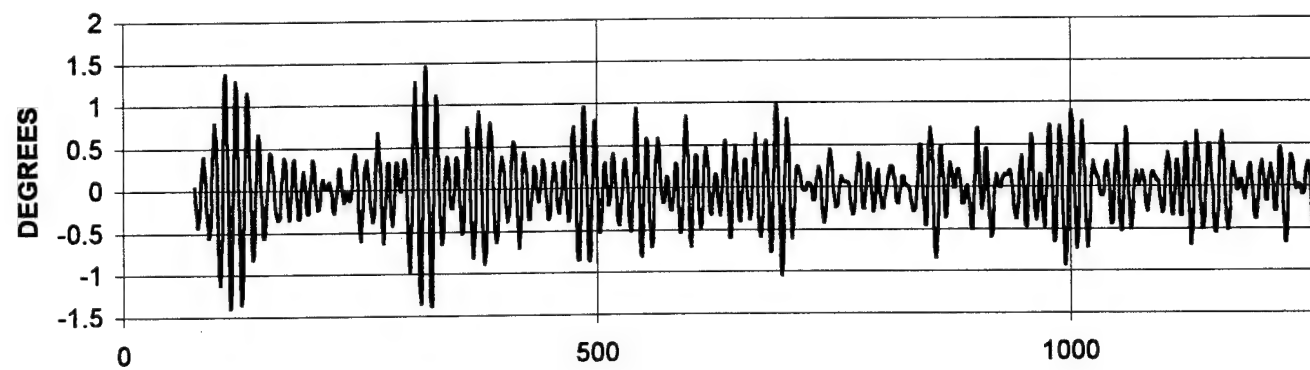
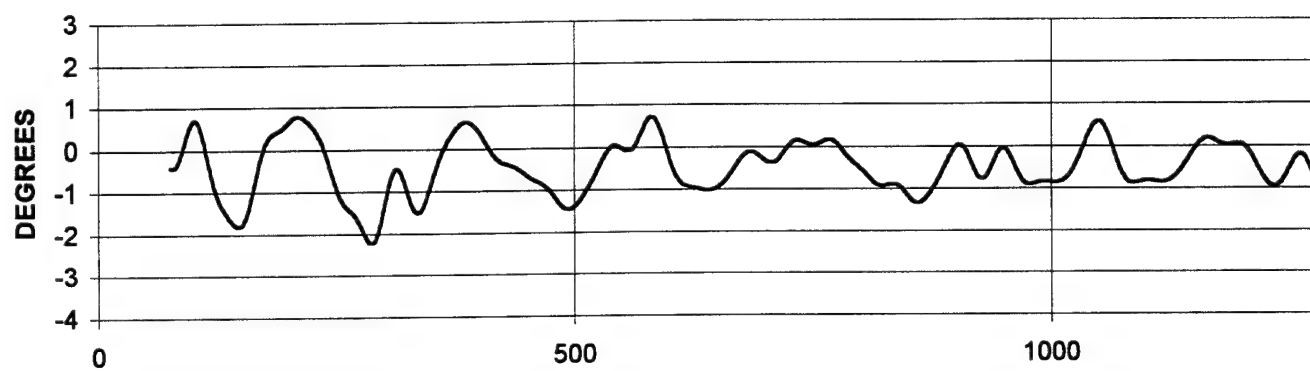
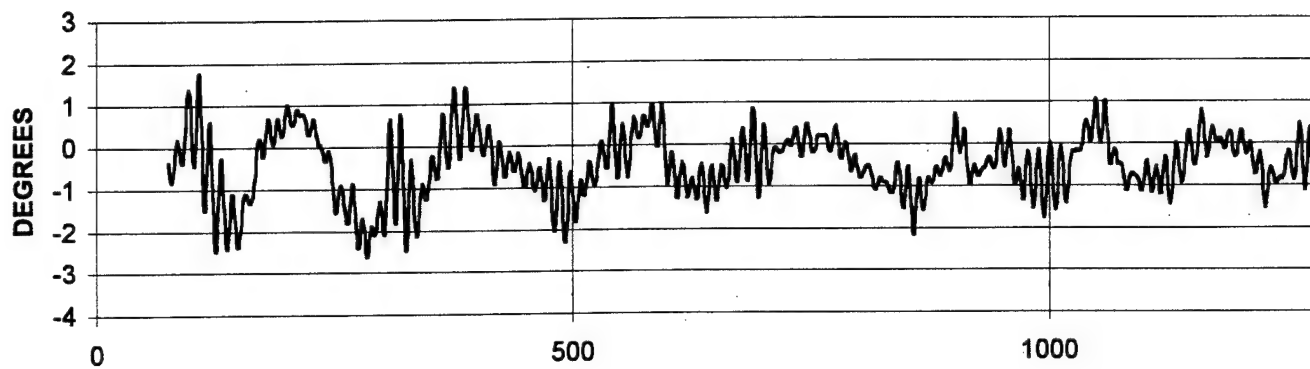
Filtered High Frequency Time History



TEST A908 - BUOY 2 TENSION

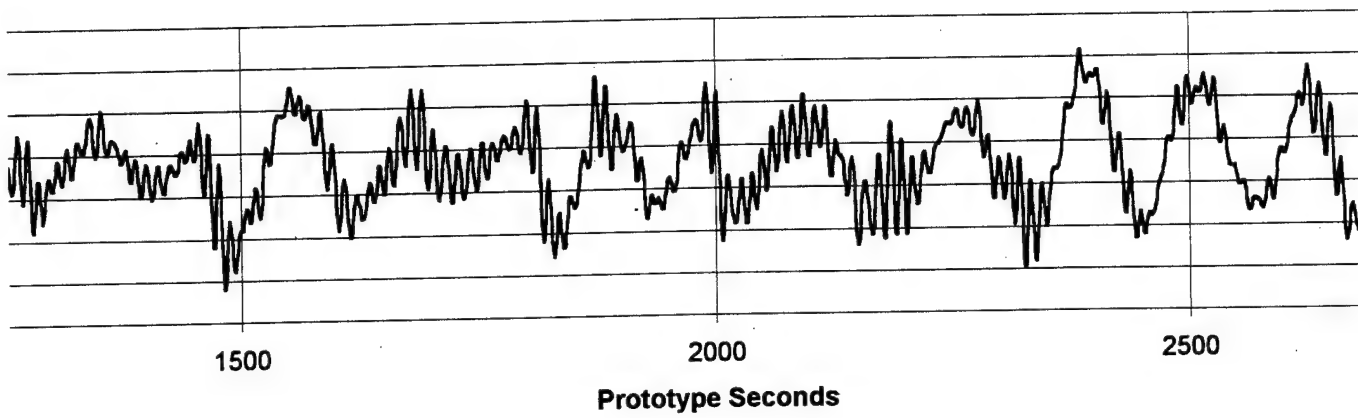


TEST A908 - PITCH

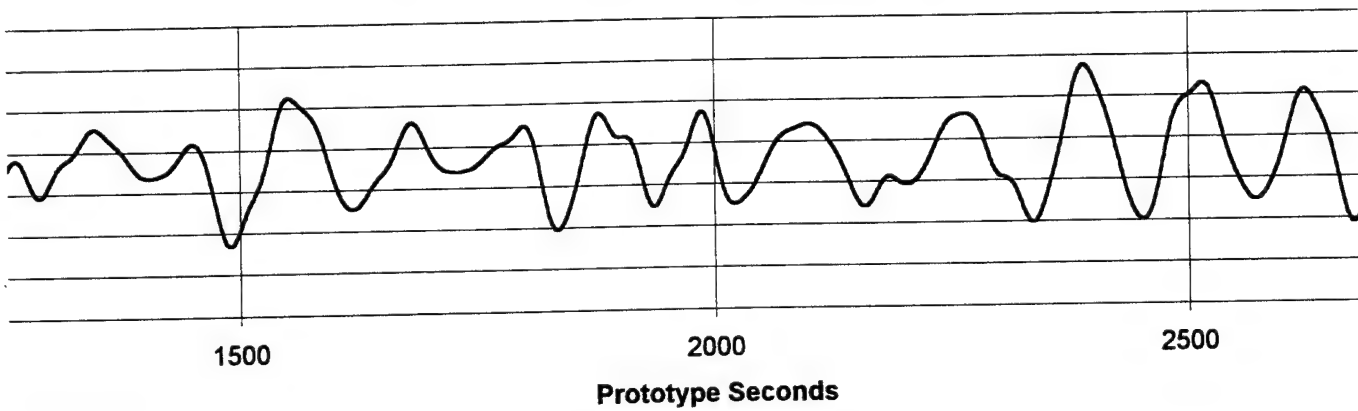


TEST A908 - PITCH

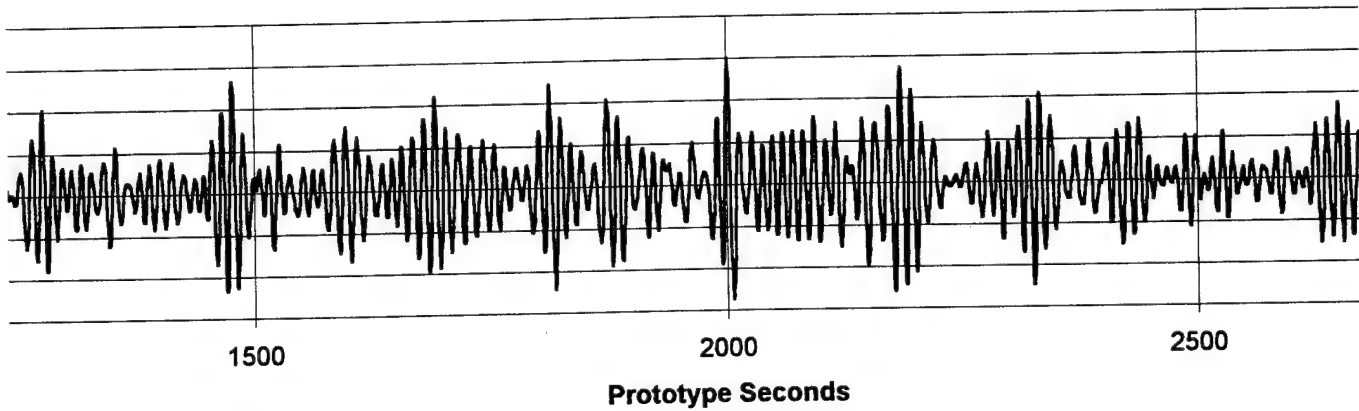
Unfiltered Time History



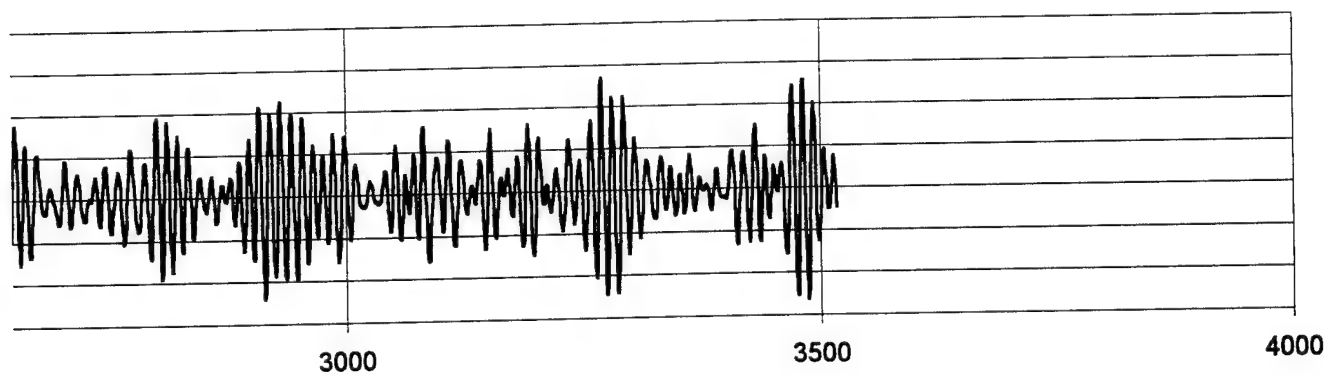
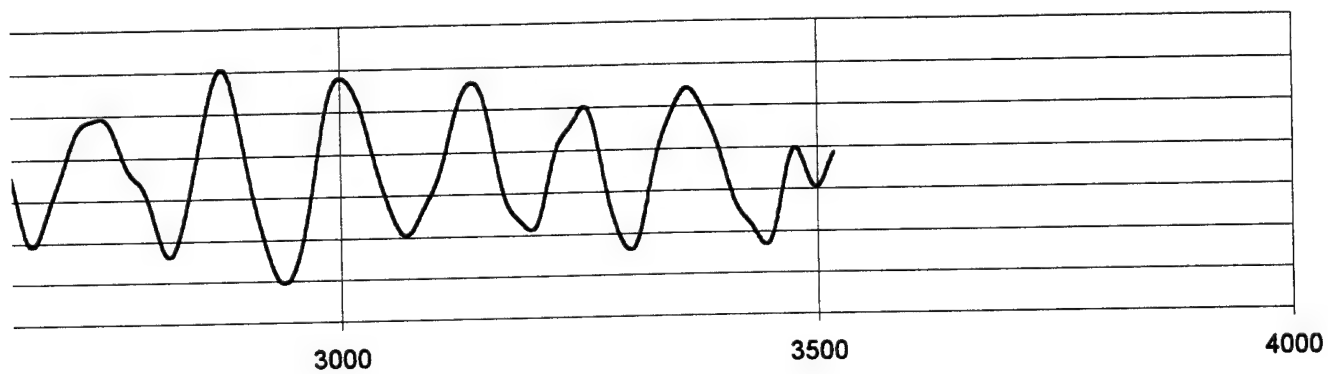
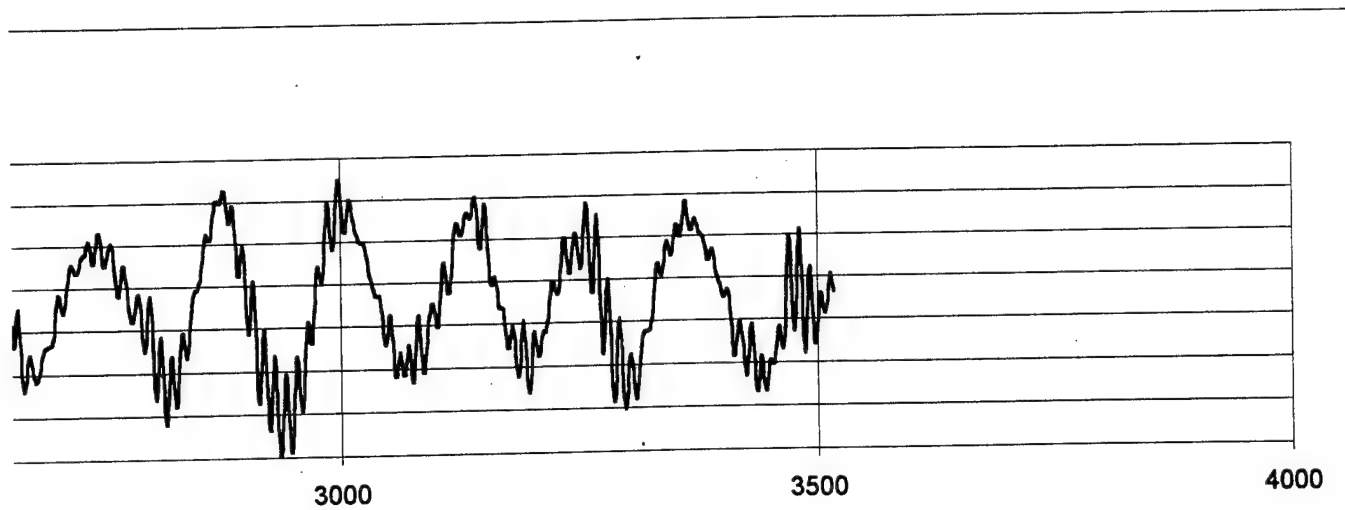
Filtered Low Frequency Time History



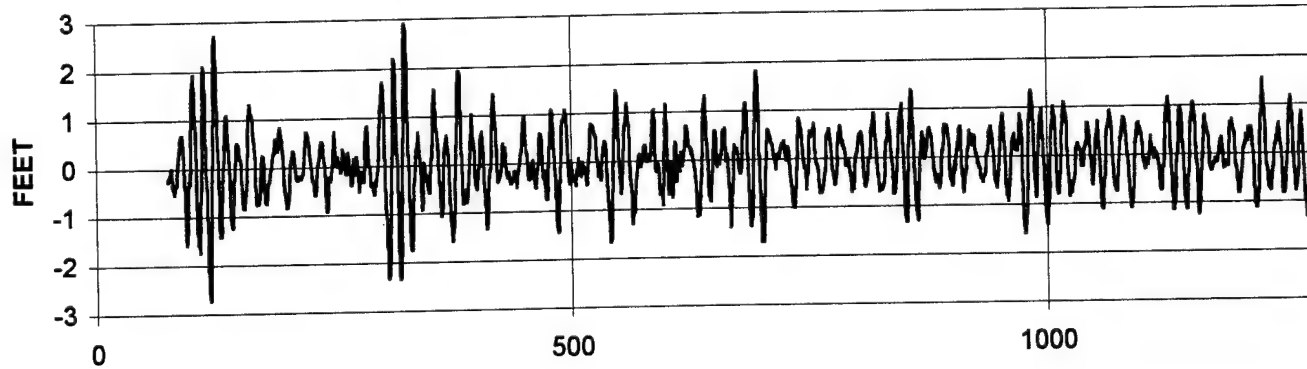
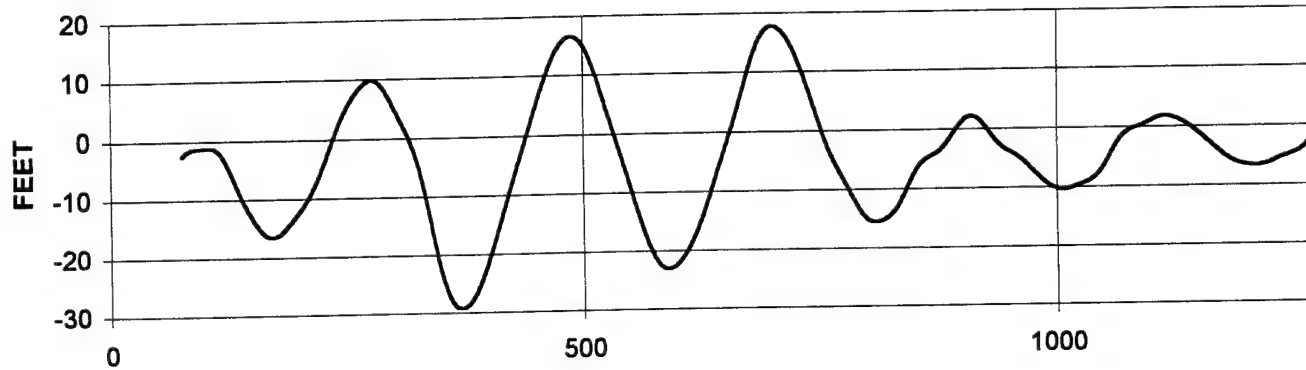
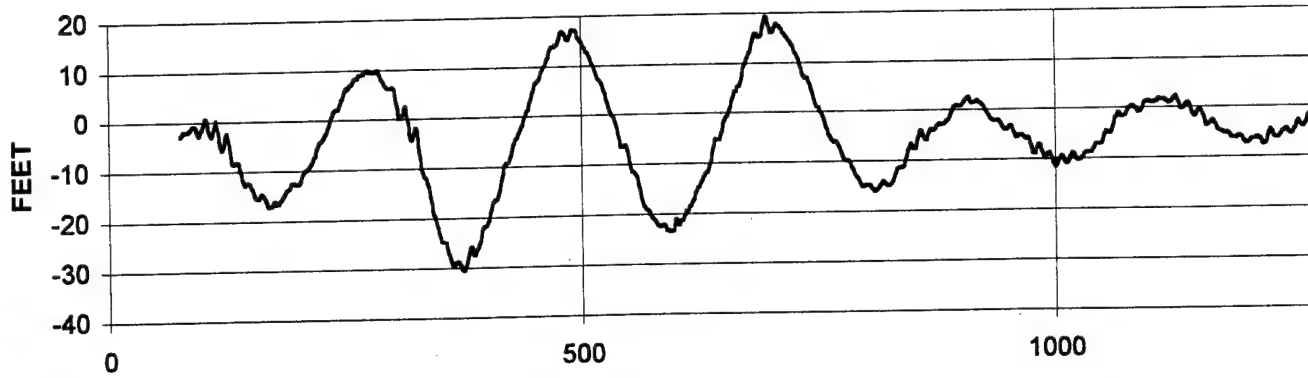
Filtered High Frequency Time History



TEST A908 - PITCH

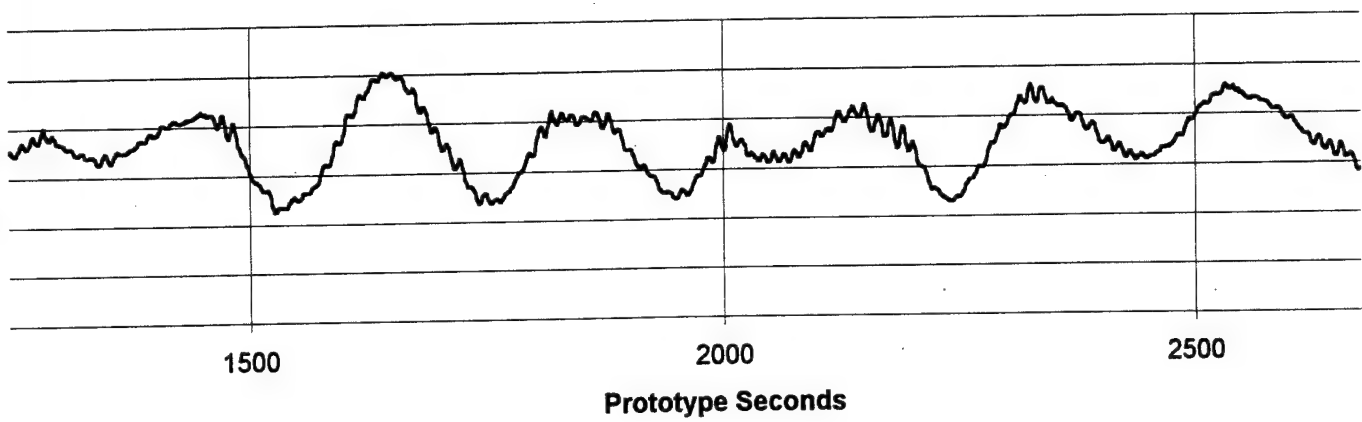


TEST A908 - PT SURGE

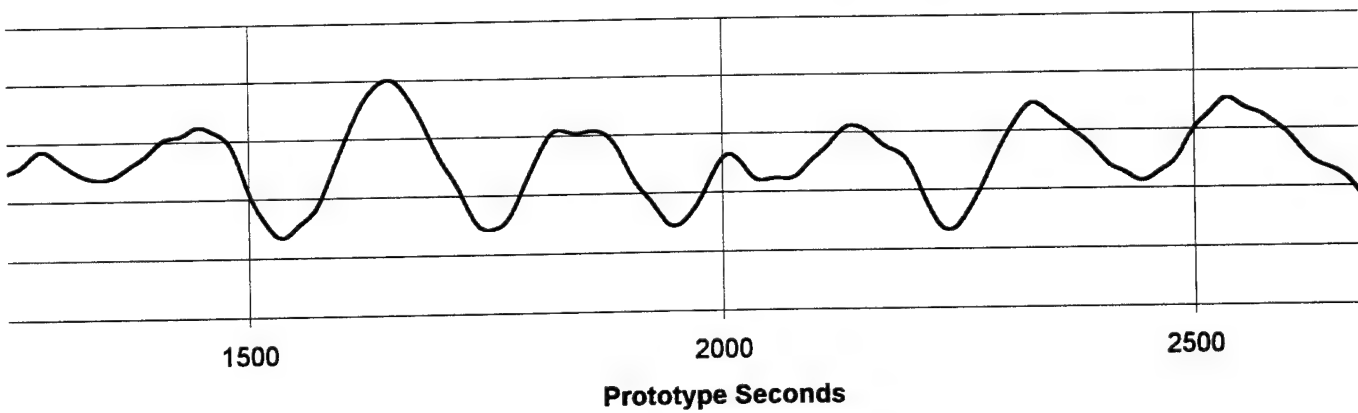


TEST A908 - PT SURGE

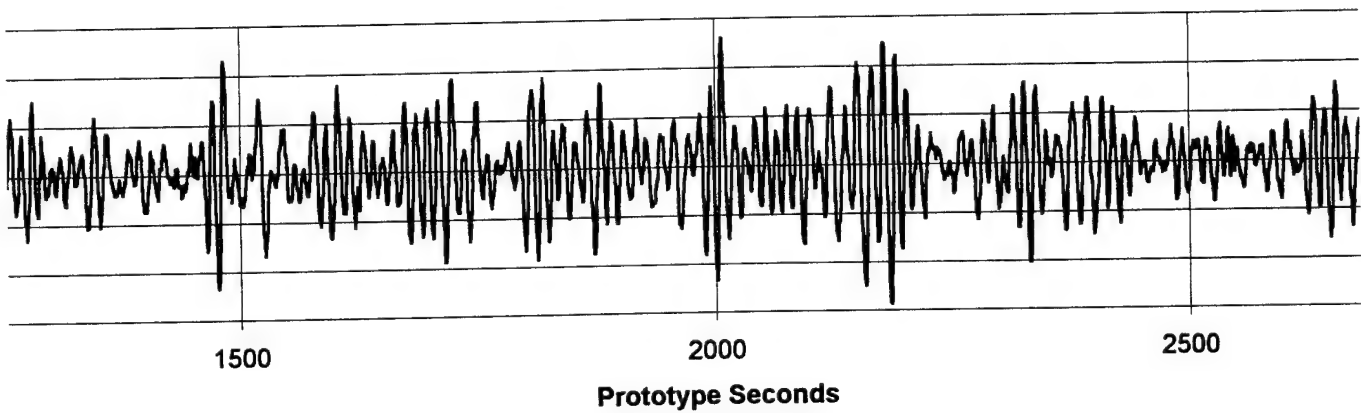
Unfiltered Time History



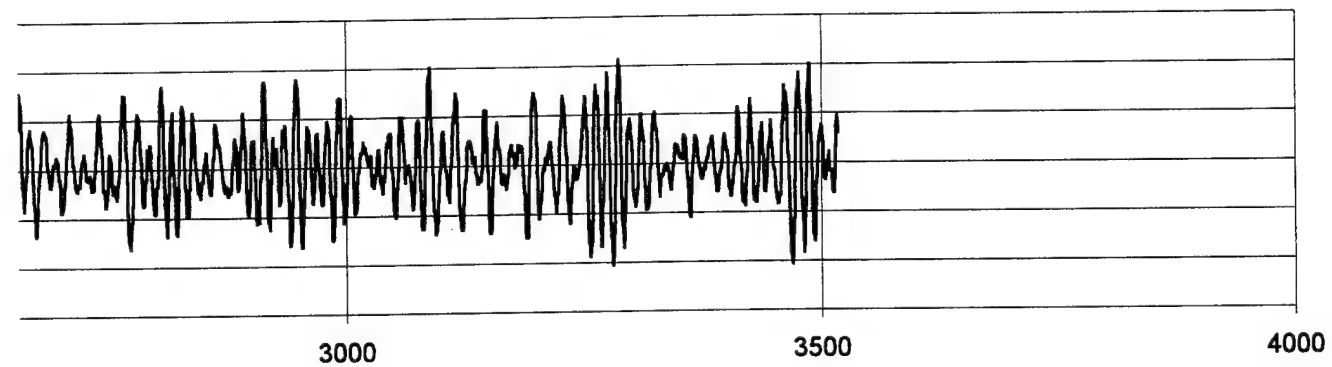
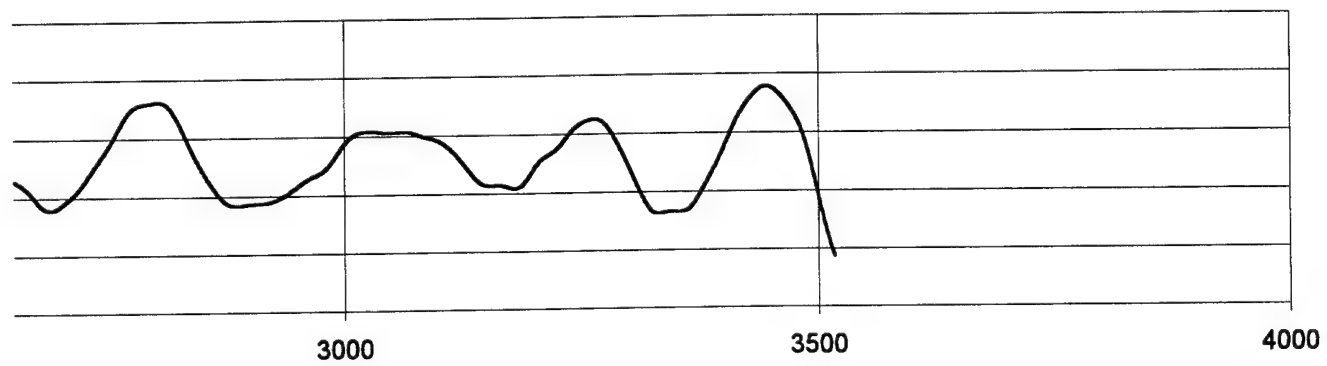
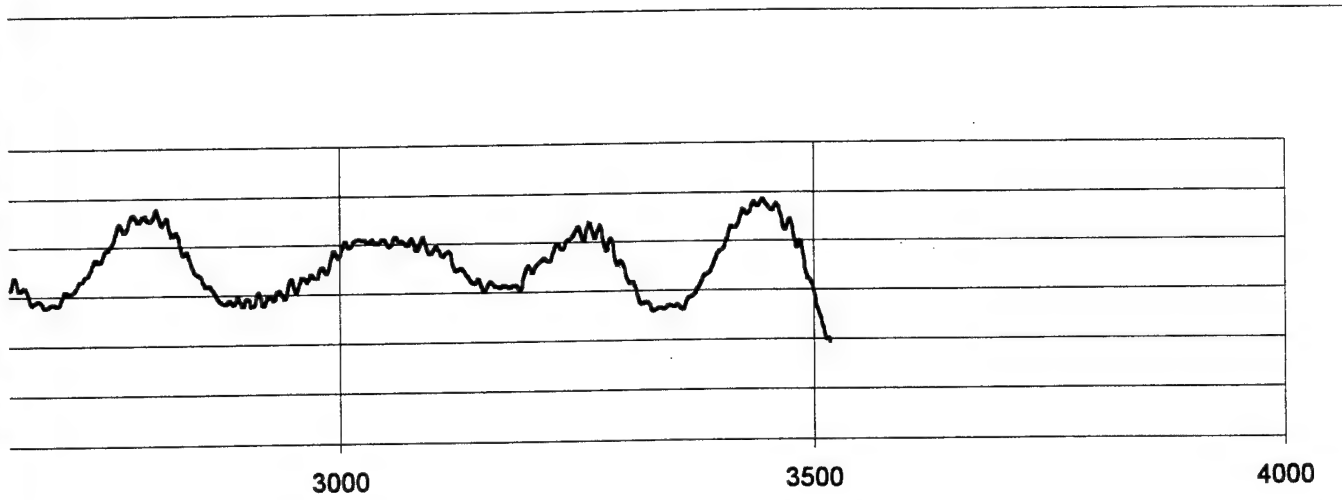
Filtered Low Frequency Time History



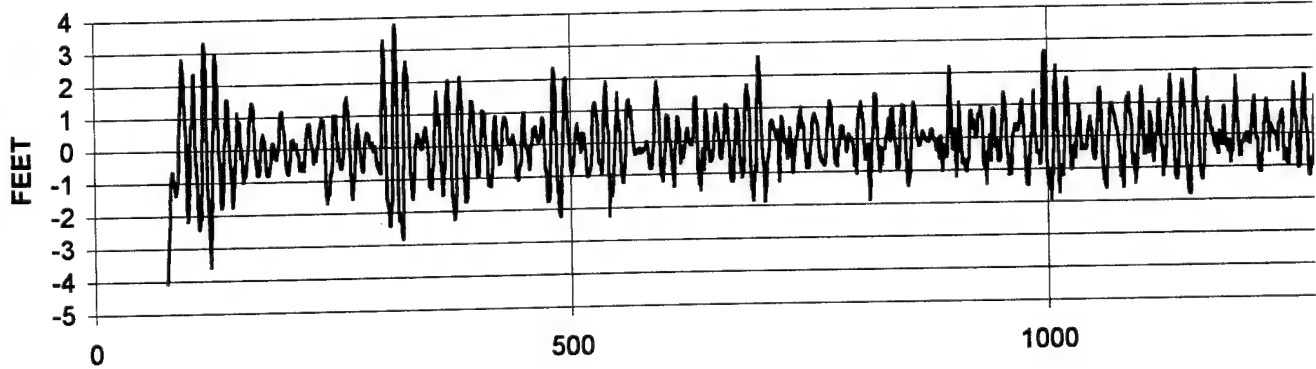
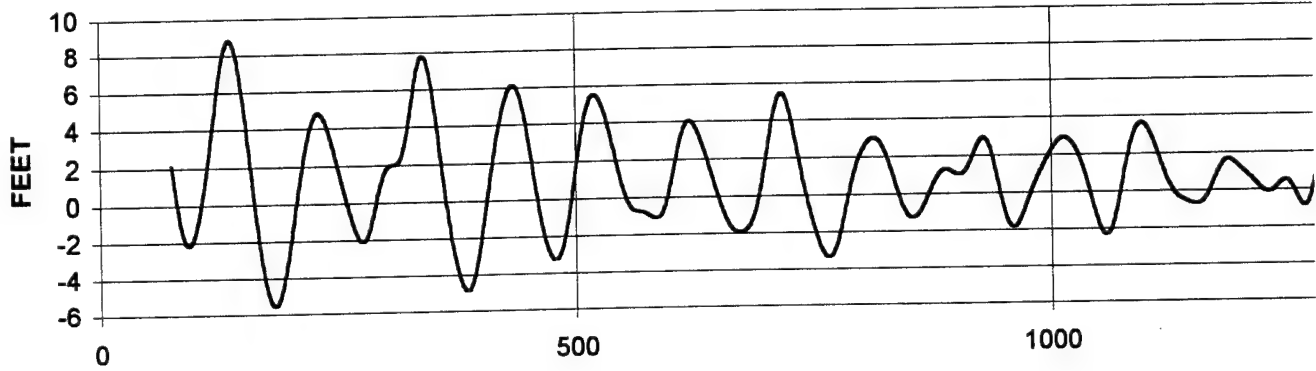
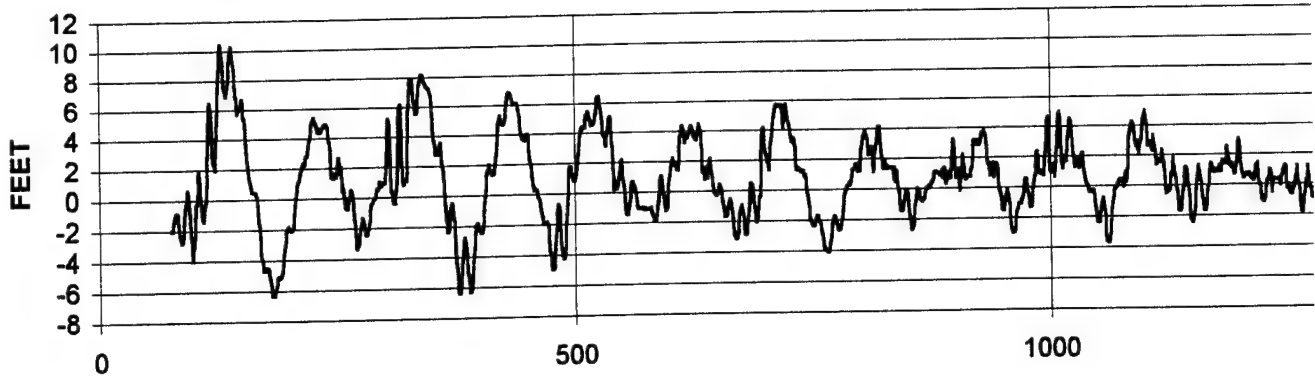
Filtered High Frequency Time History



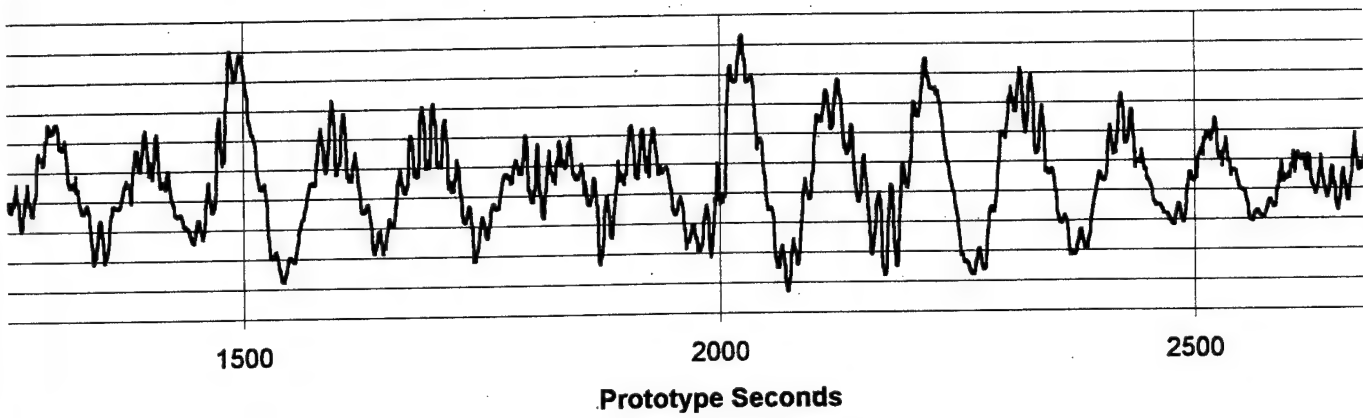
TEST A908 - PT SURGE



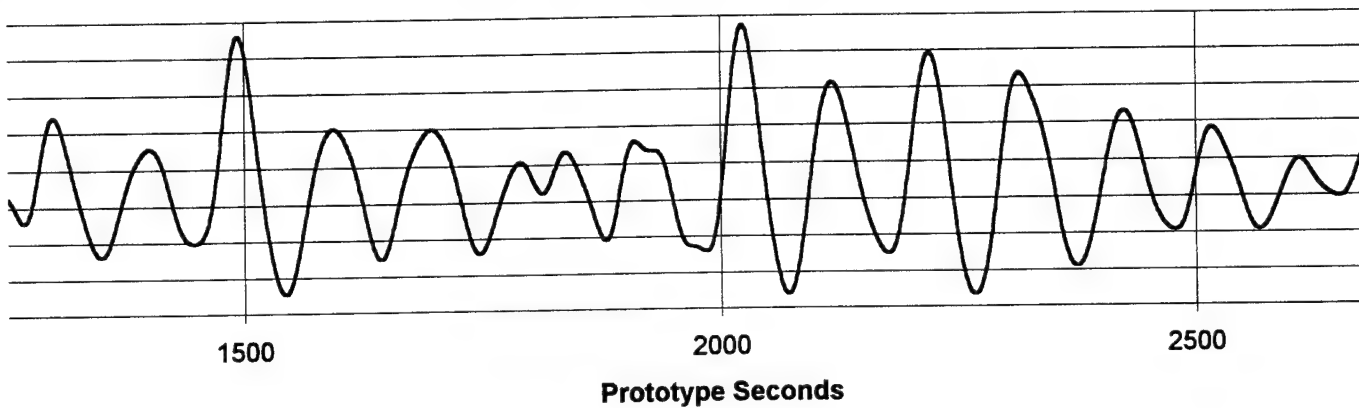
TEST A908 - PT HEAVE



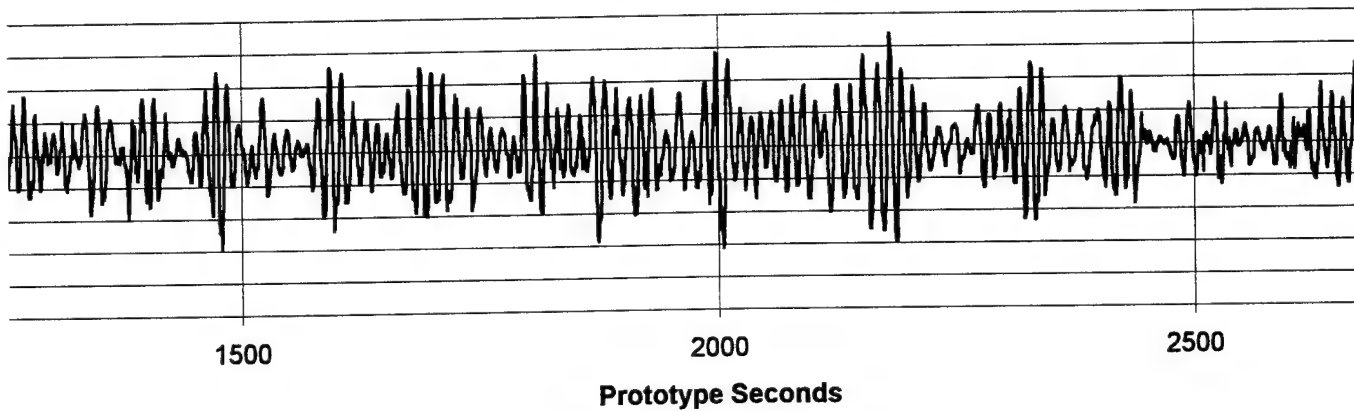
Unfiltered Time History



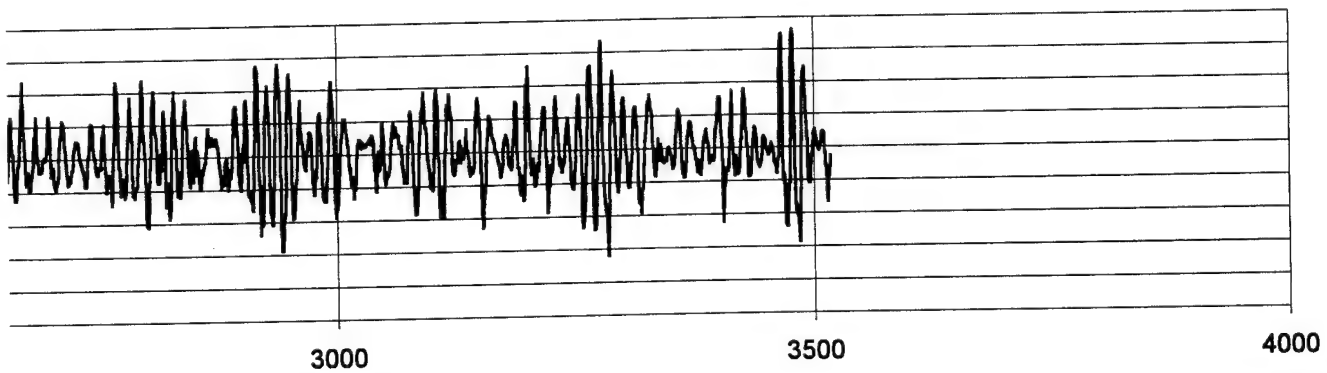
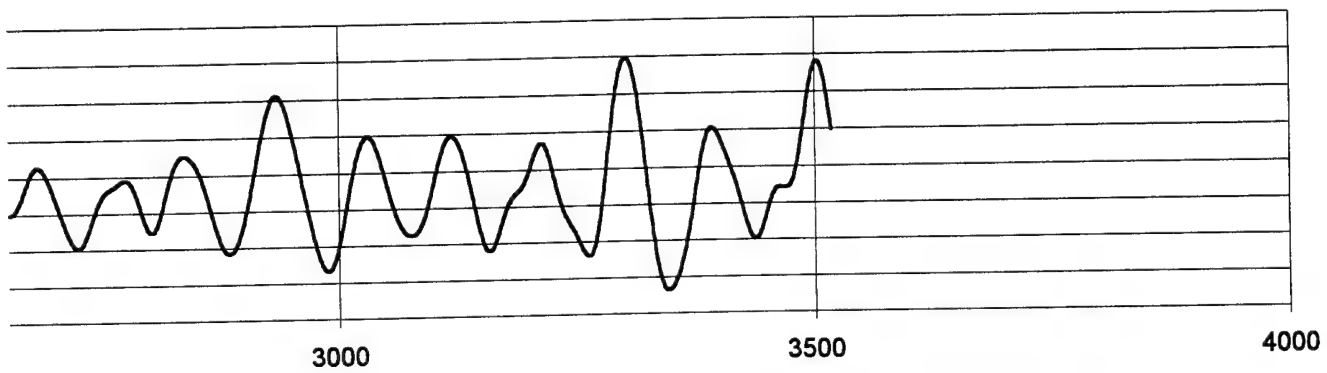
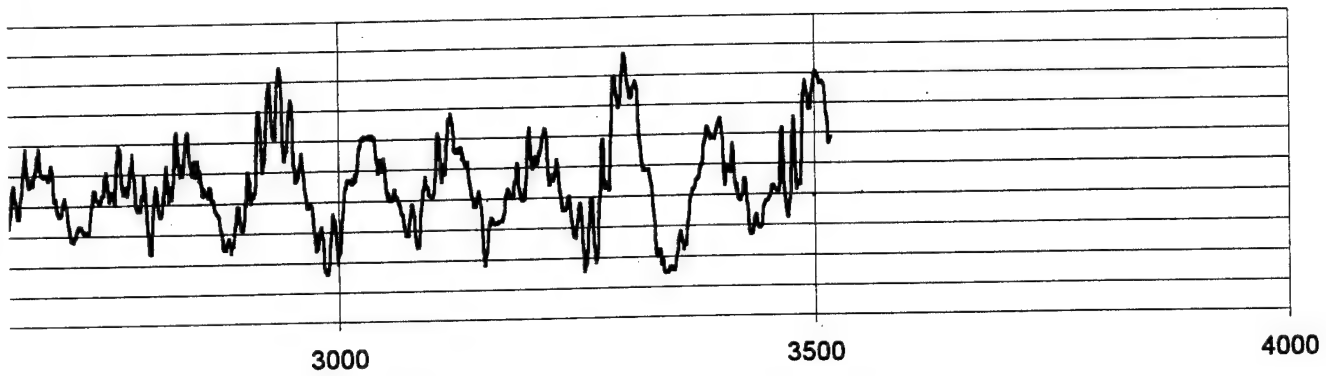
Filtered Low Frequency Time History



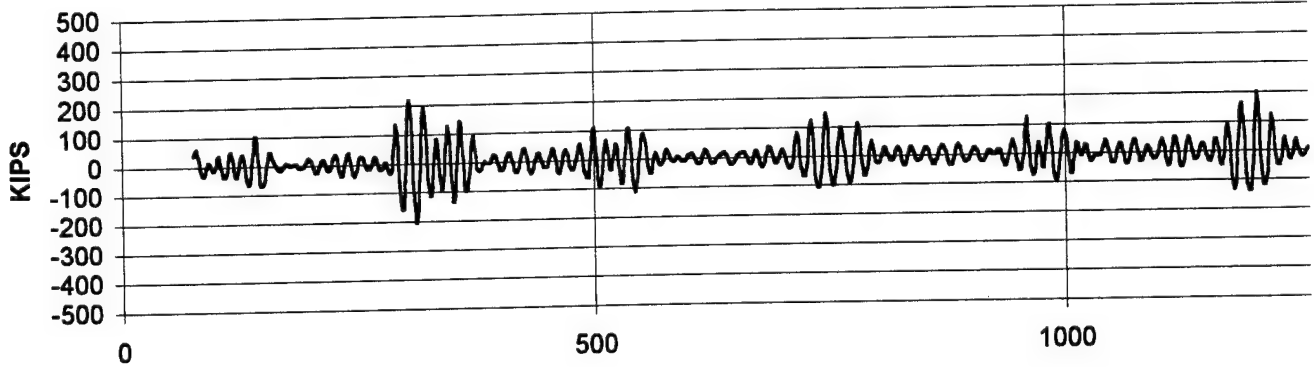
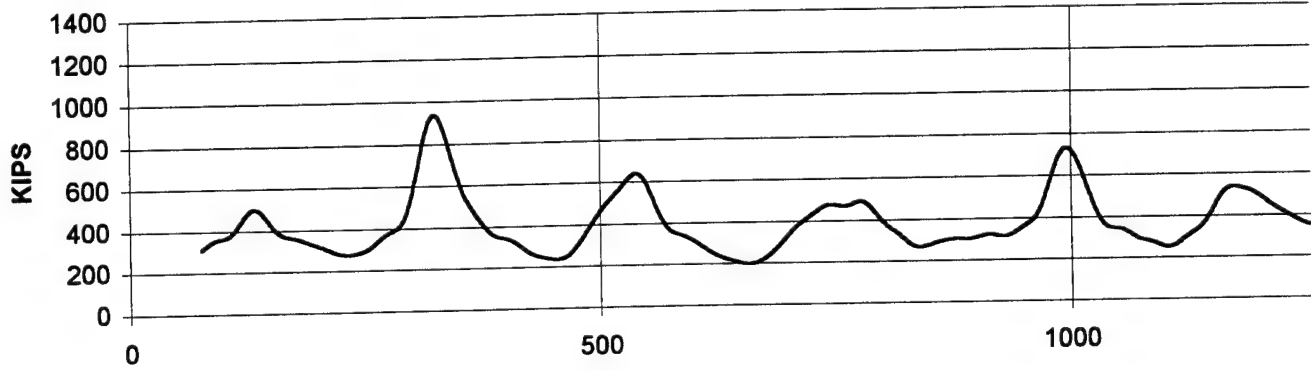
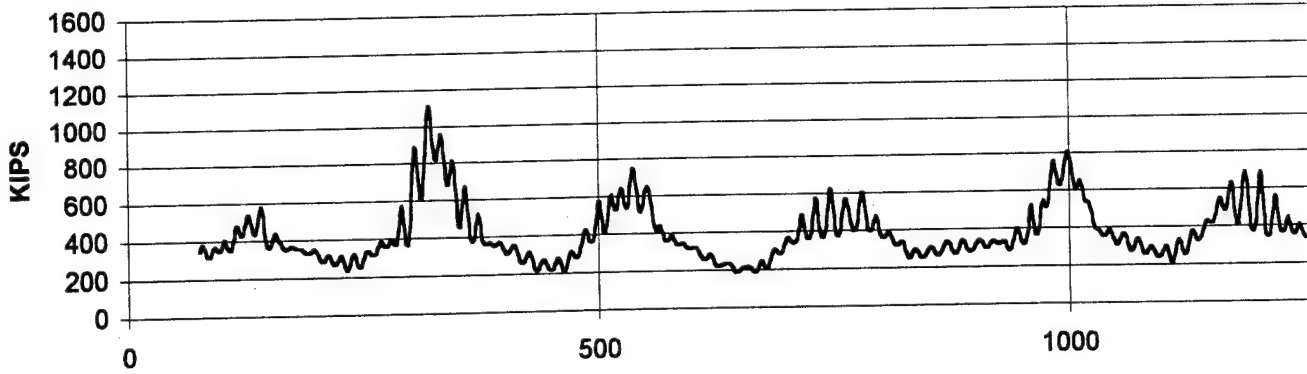
Filtered High Frequency Time History



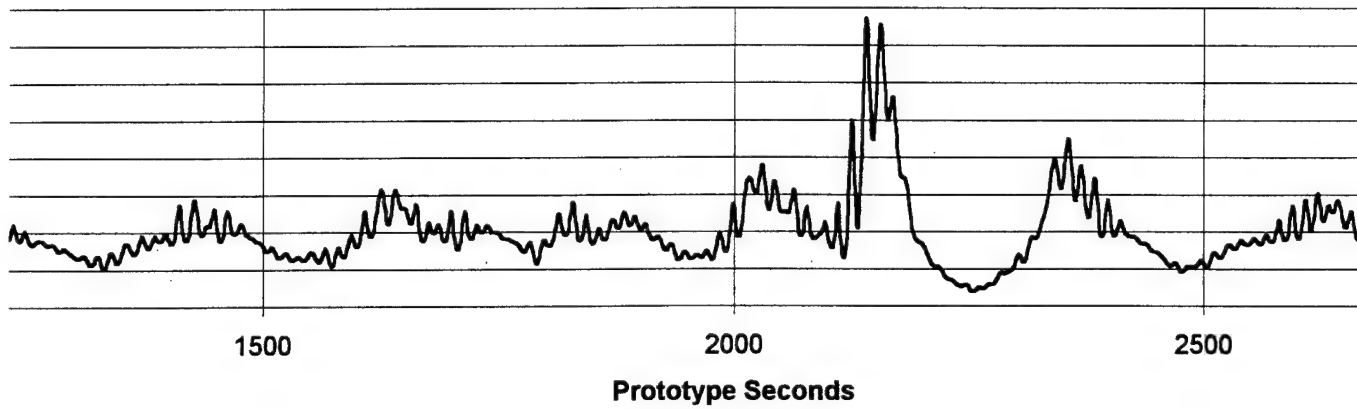
TEST A908 - PT HEAVE



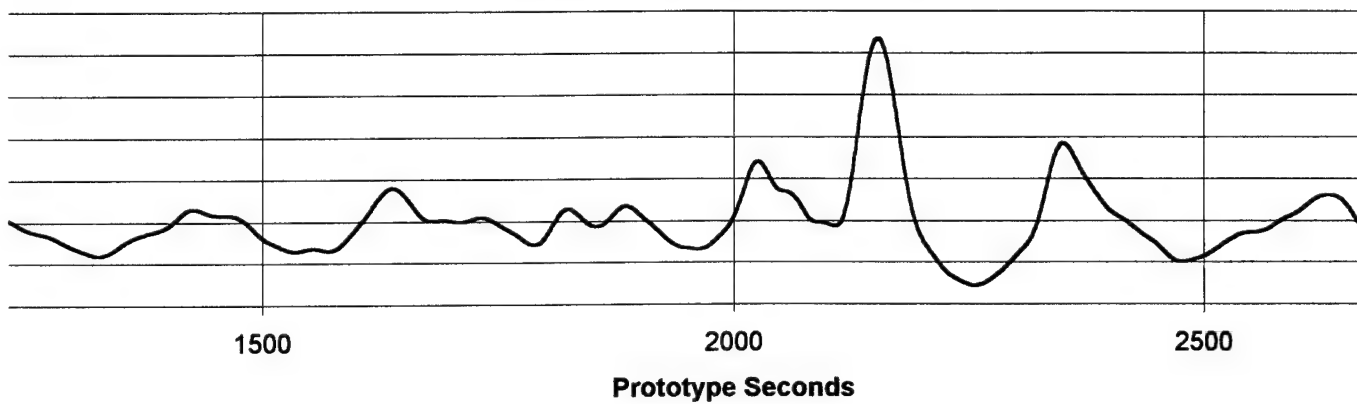
TEST A909 - ML_1 TENSION



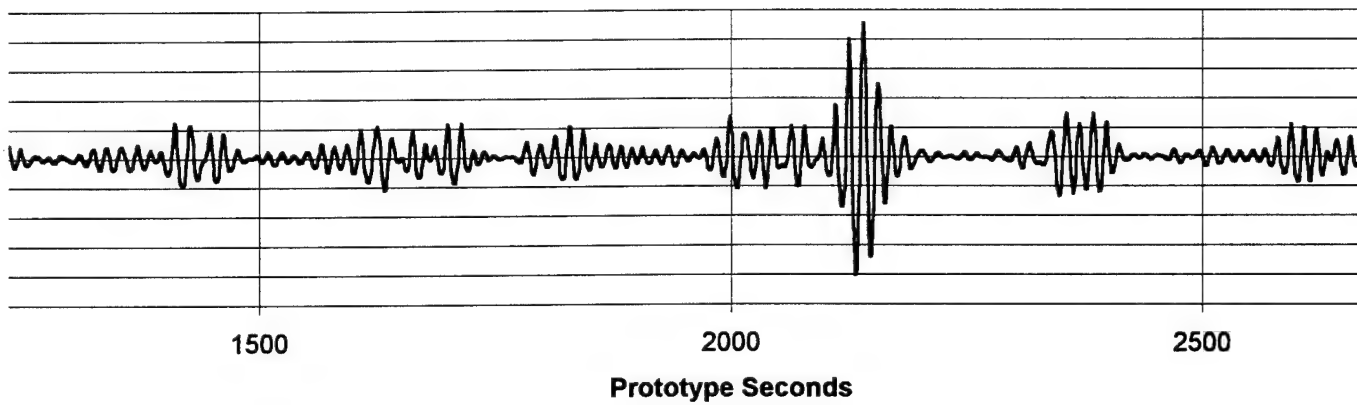
Unfiltered Time History



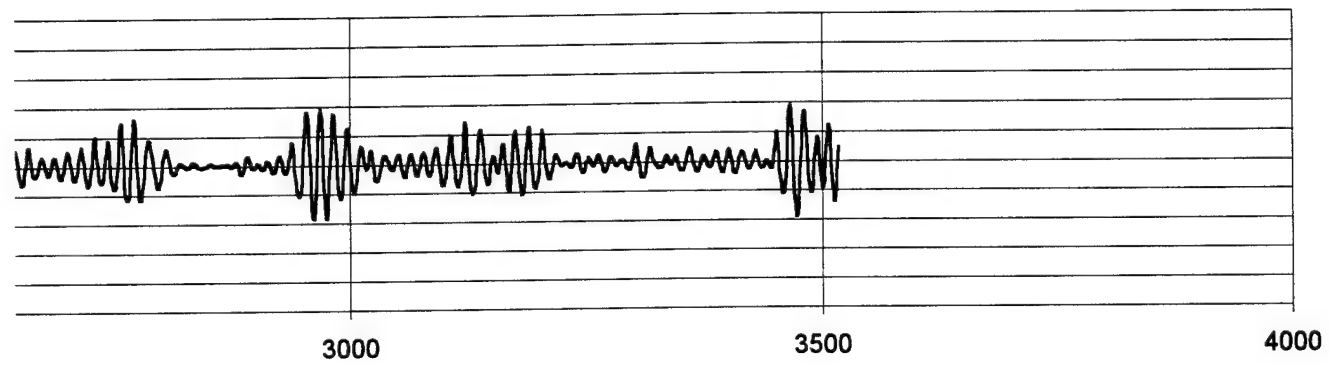
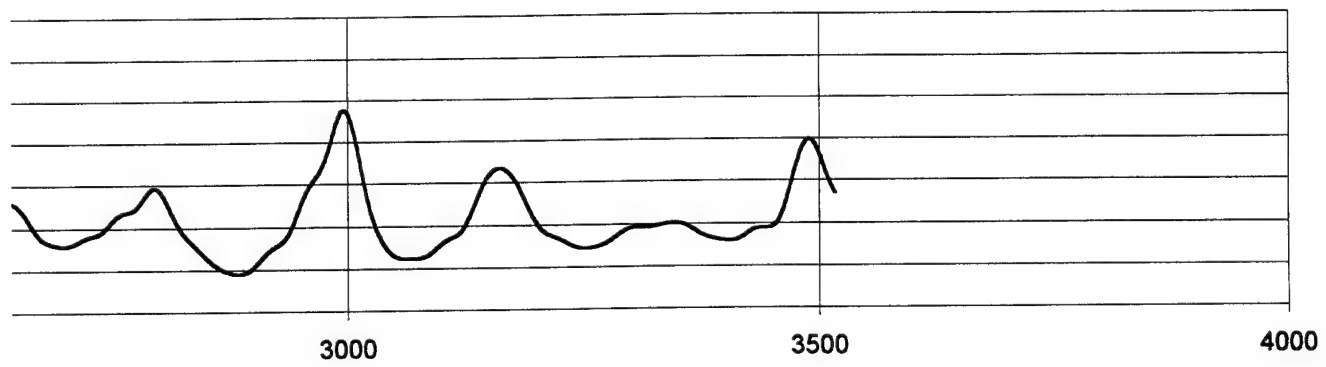
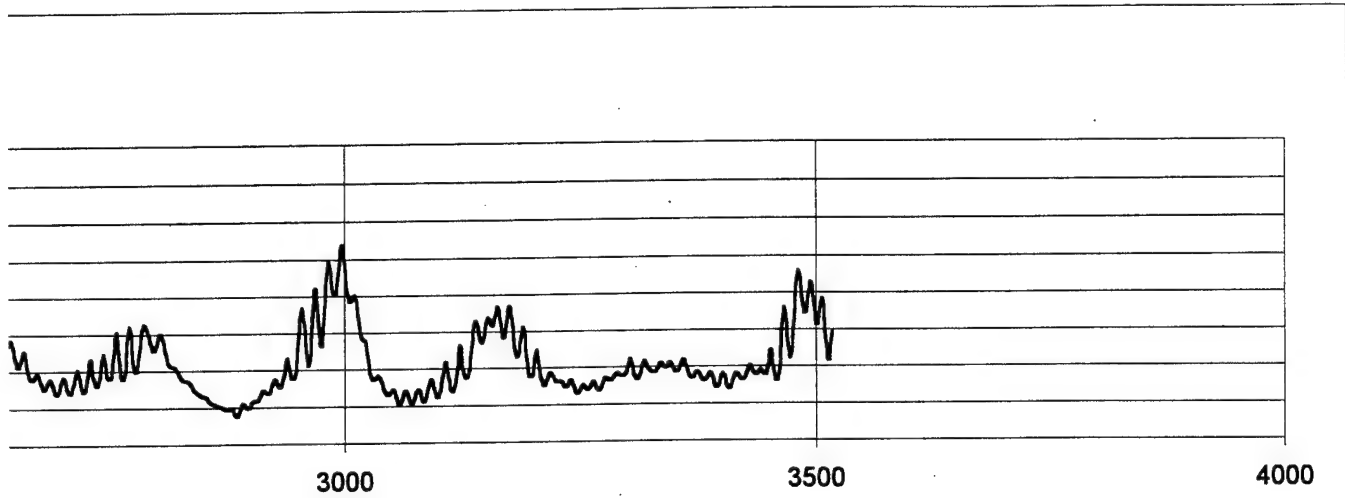
Filtered Low Frequency Time History



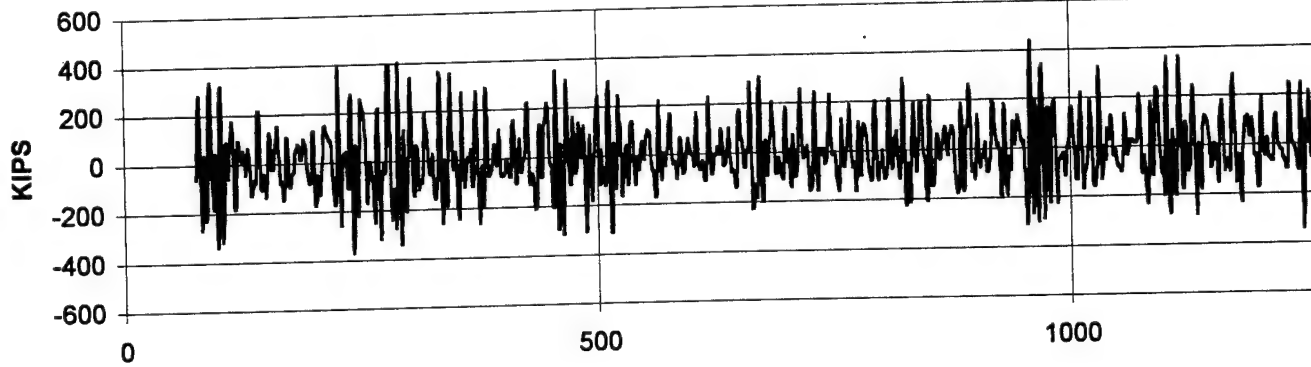
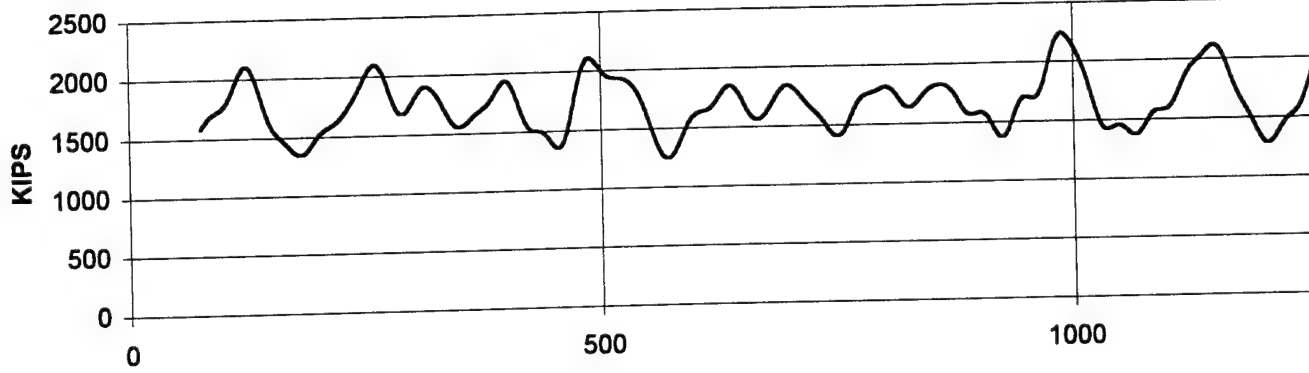
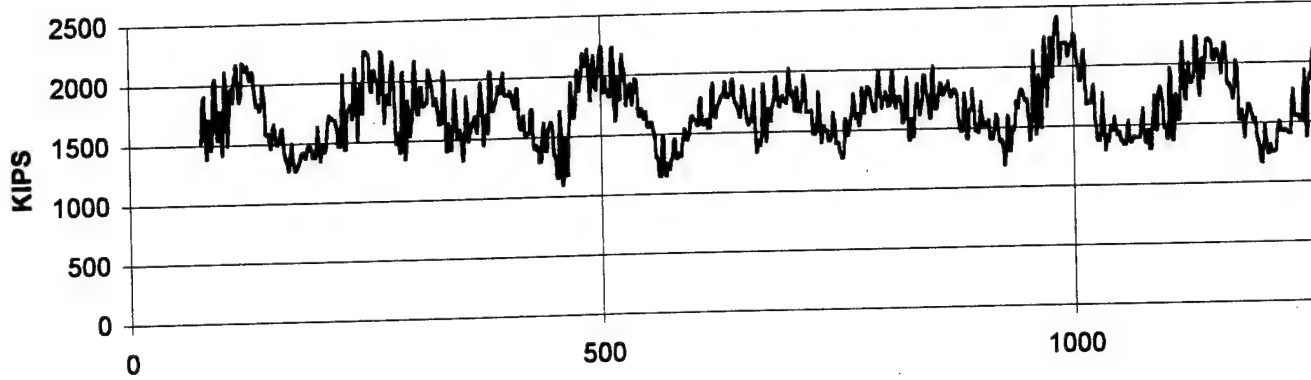
Filtered High Frequency Time History



TEST A909 - ML_1 TENSION

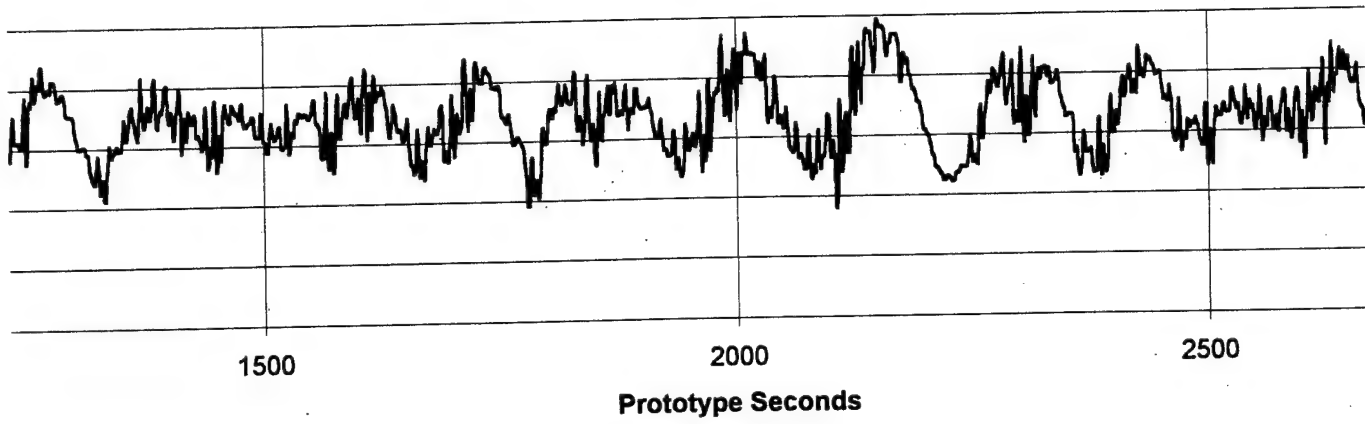


TEST A909 - BUOY 1 TENSION

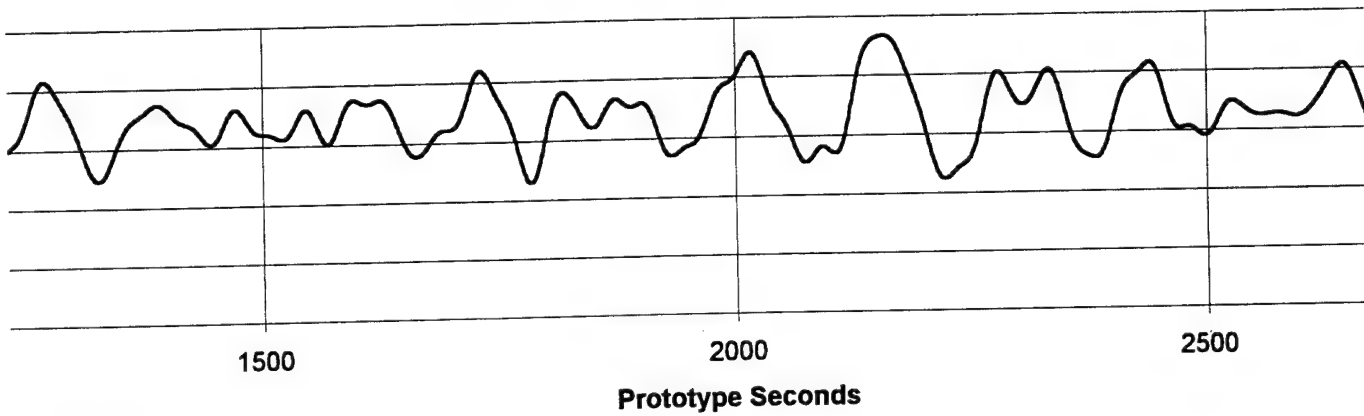


TEST A909 - BUOY 1 TENSION

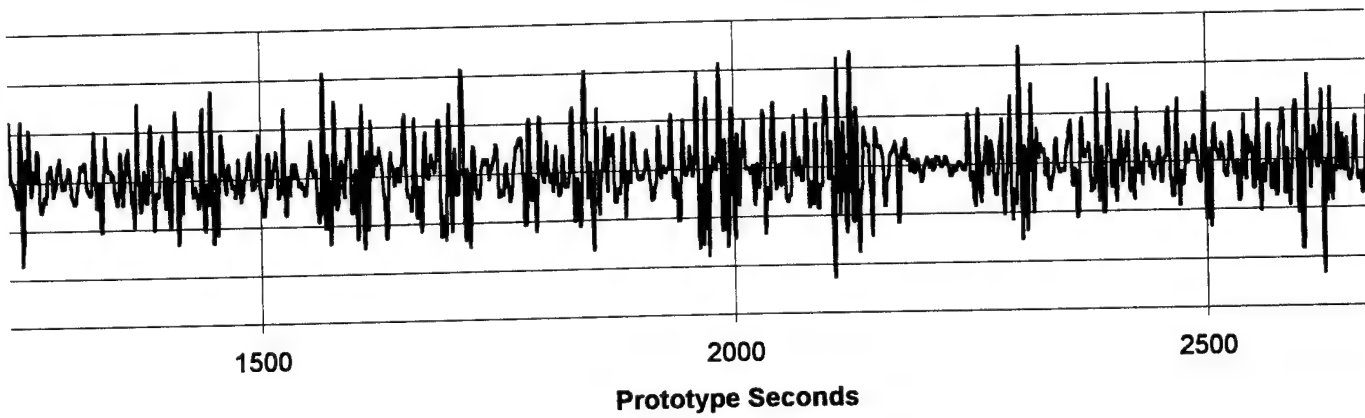
Unfiltered Time History



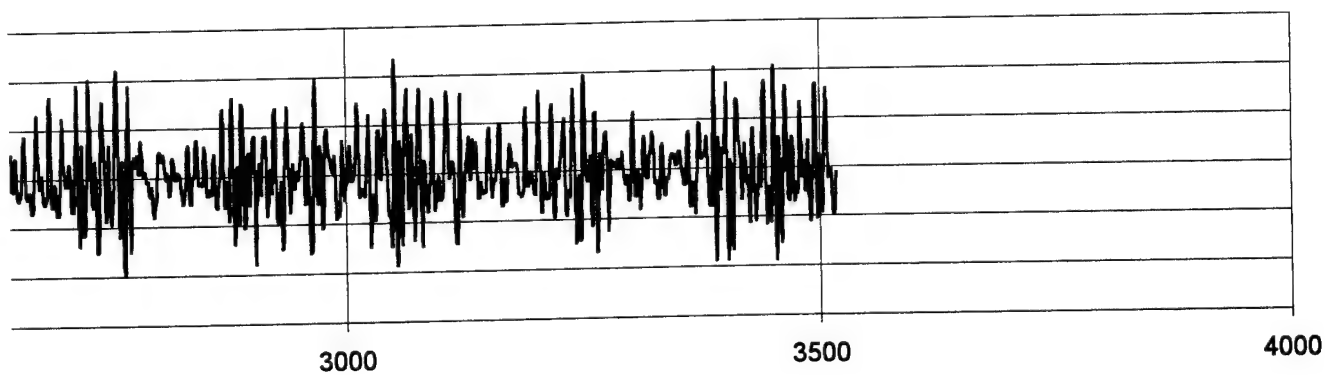
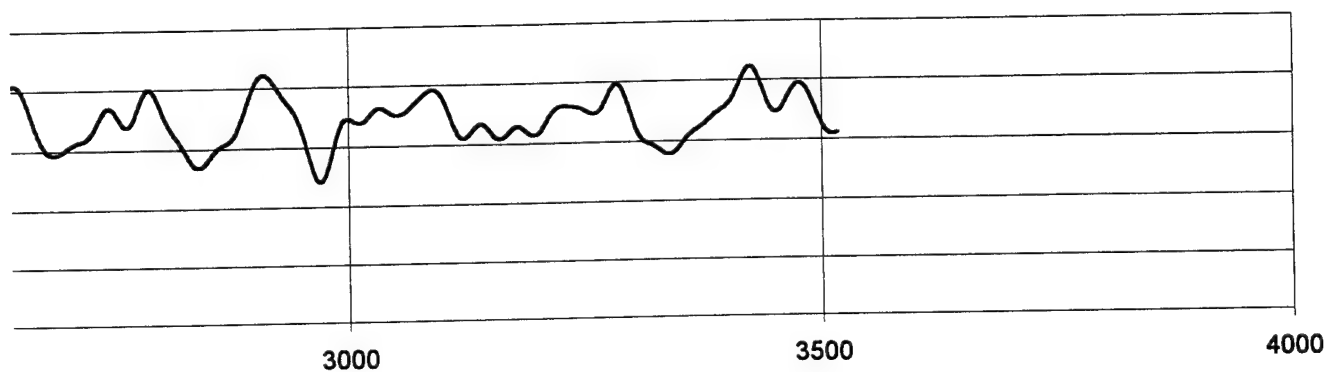
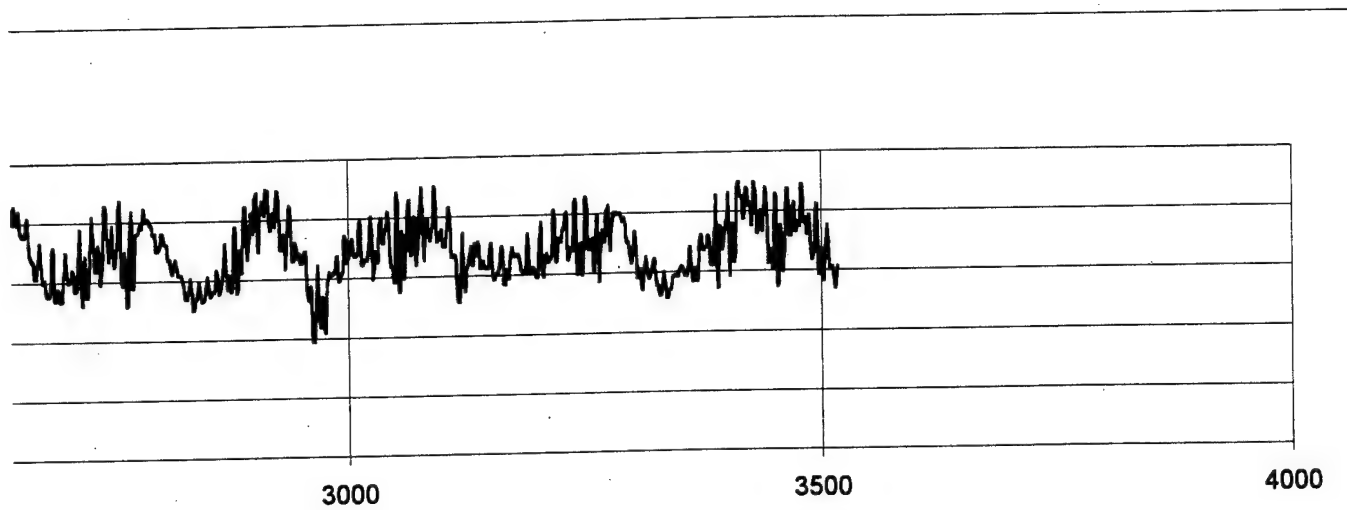
Filtered Low Frequency Time History



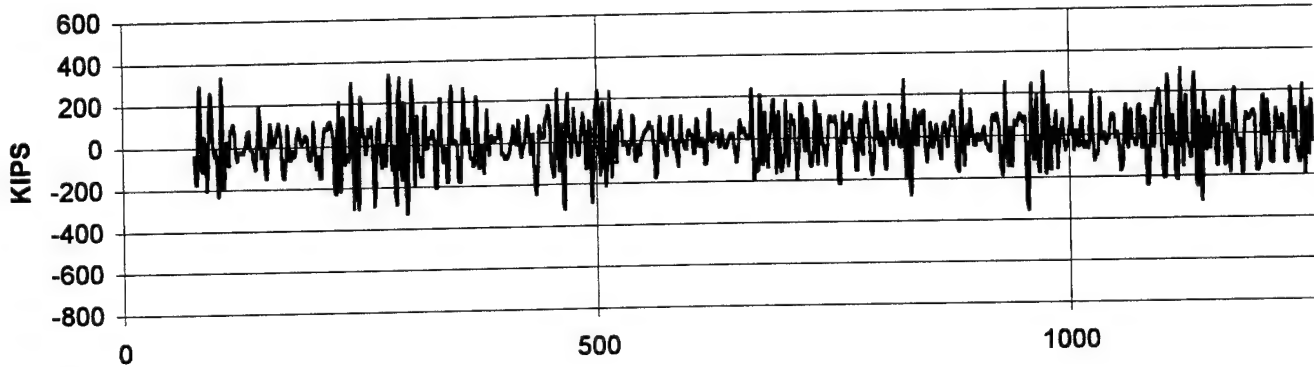
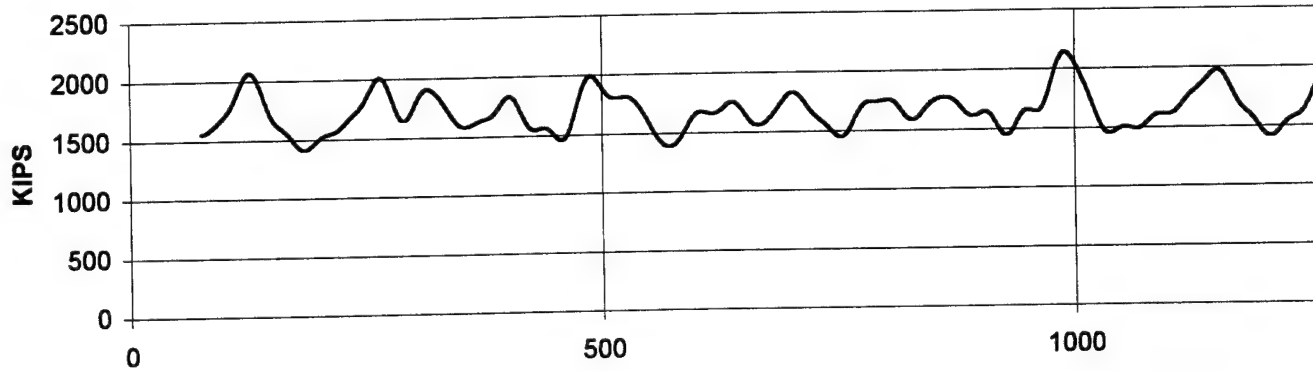
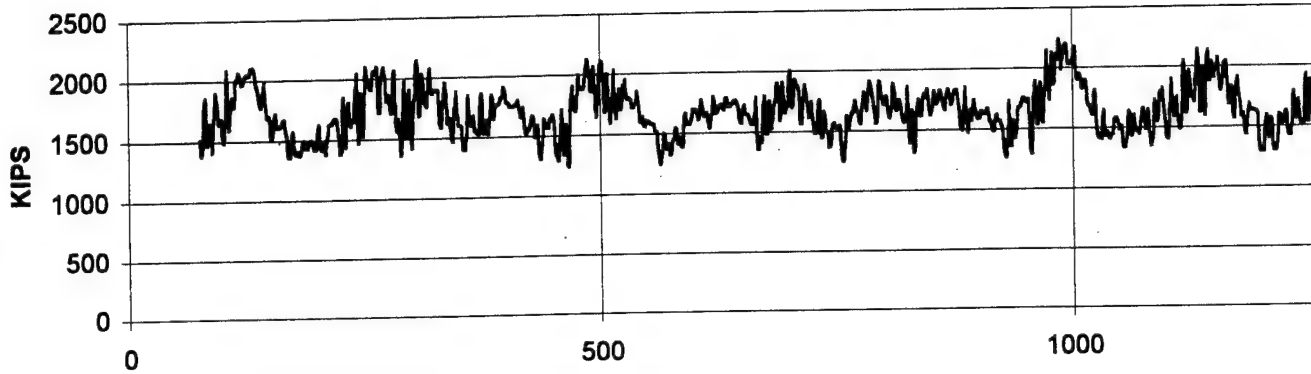
Filtered High Frequency Time History



TEST A909 - BUOY 1 TENSION

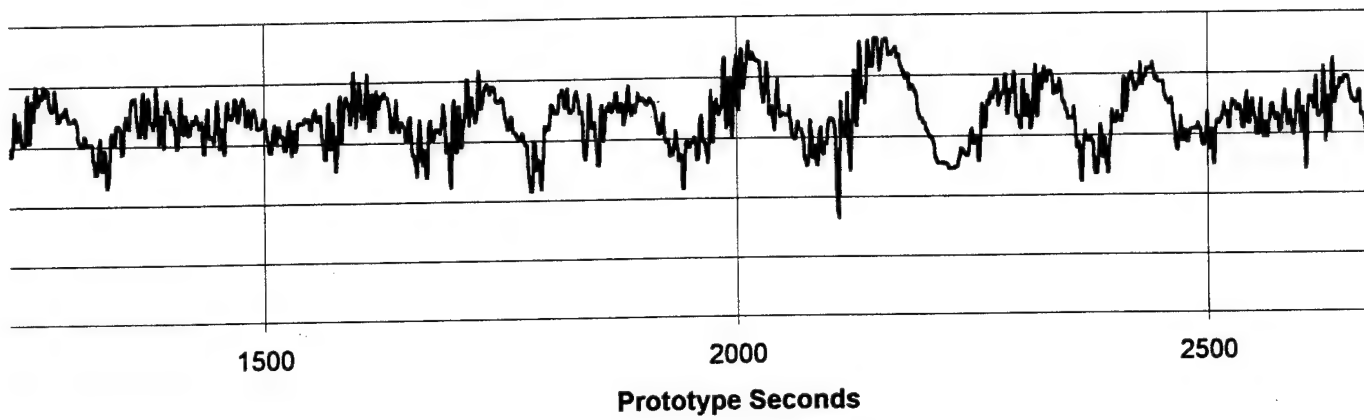


TEST A909 - BUOY 2 TENSION

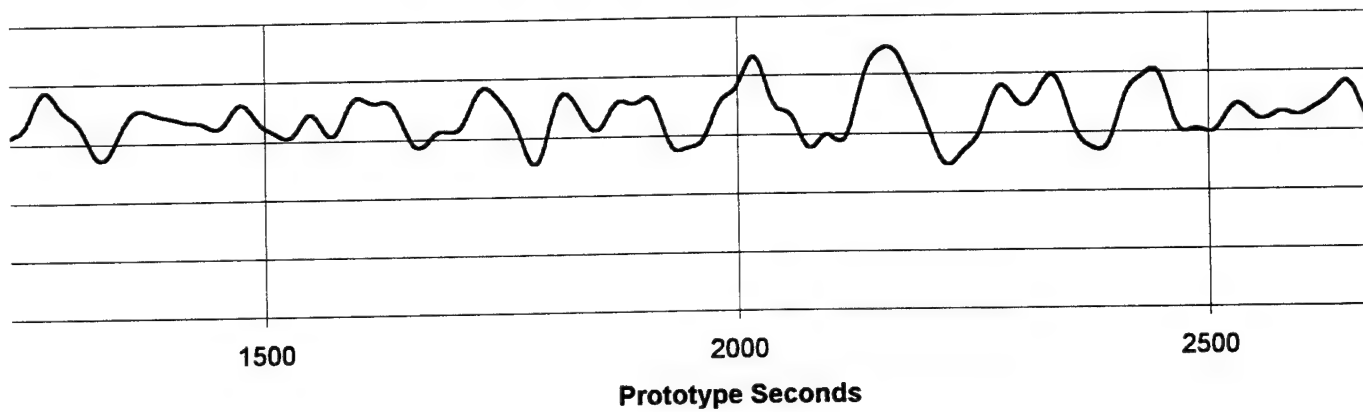


TEST A909 - BUOY 2 TENSION

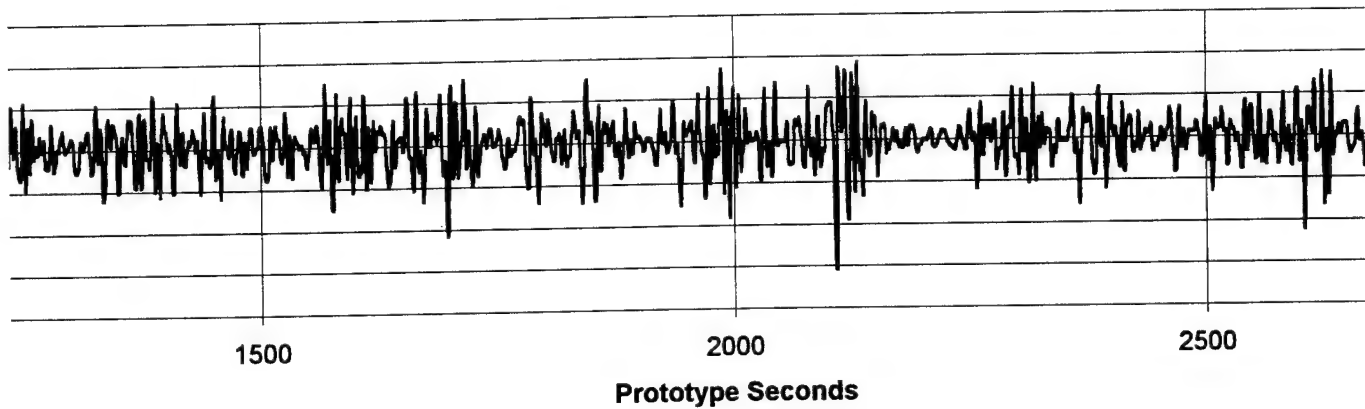
Unfiltered Time History



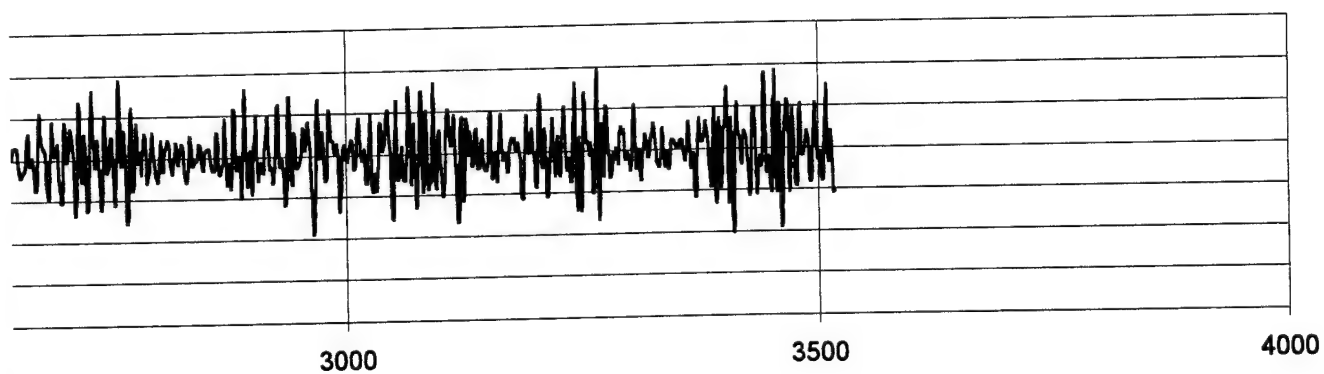
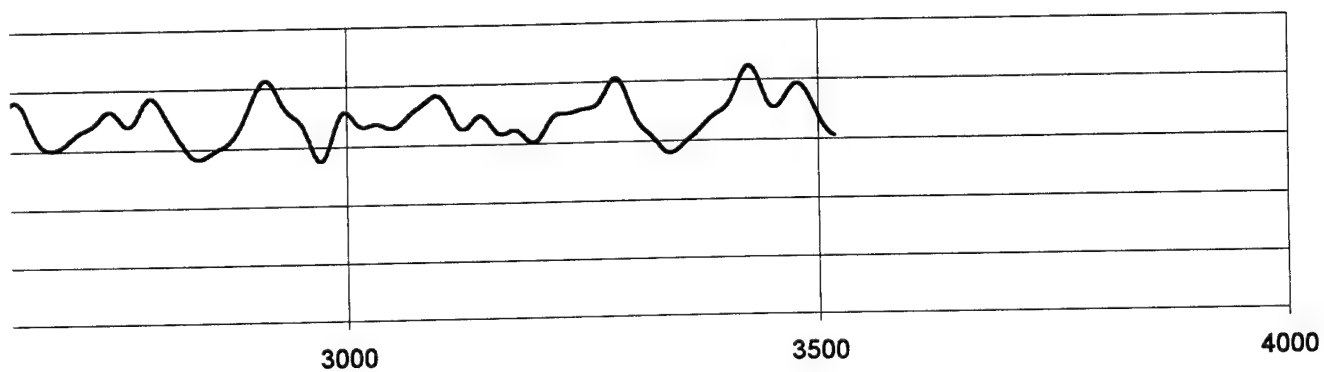
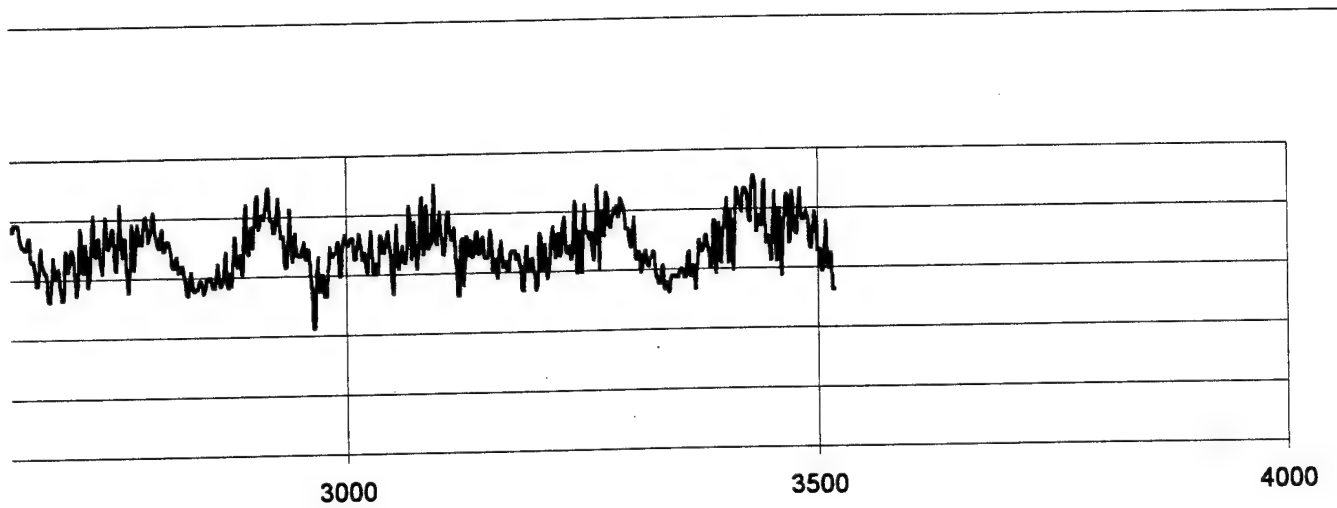
Filtered Low Frequency Time History



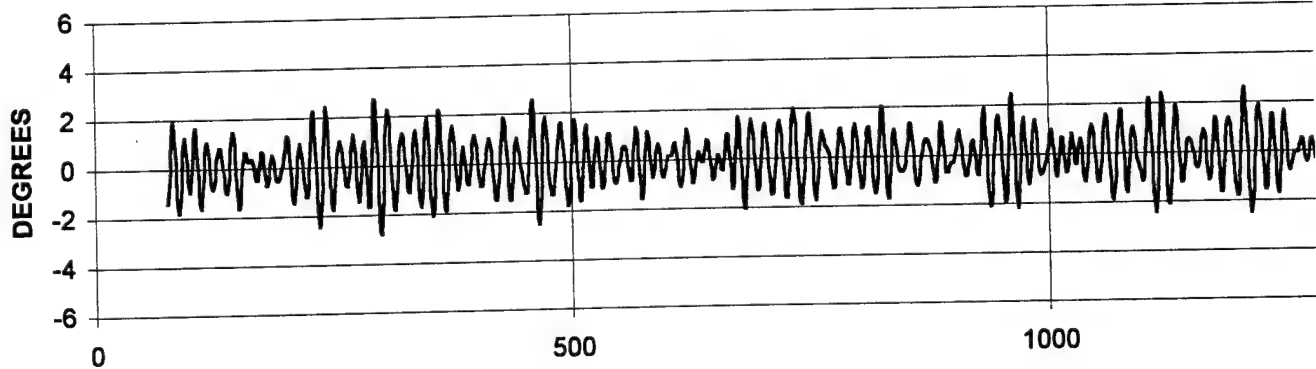
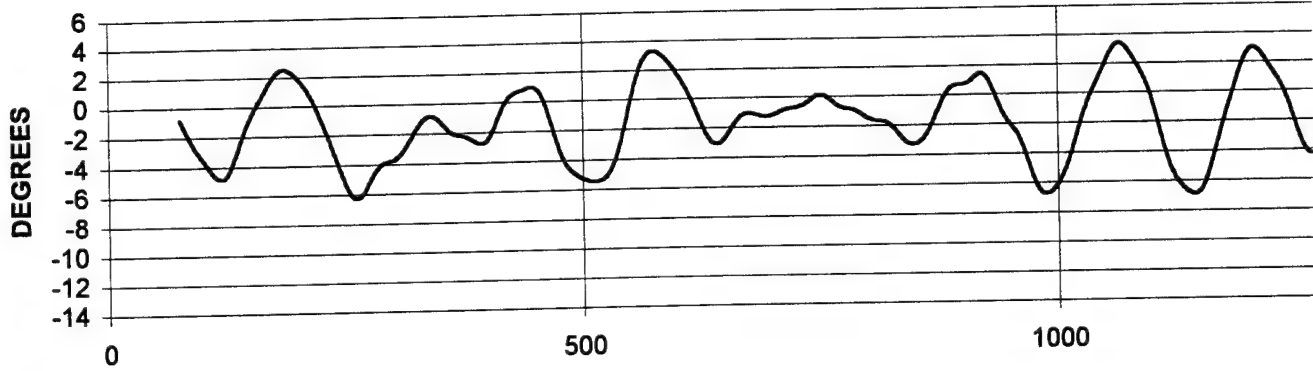
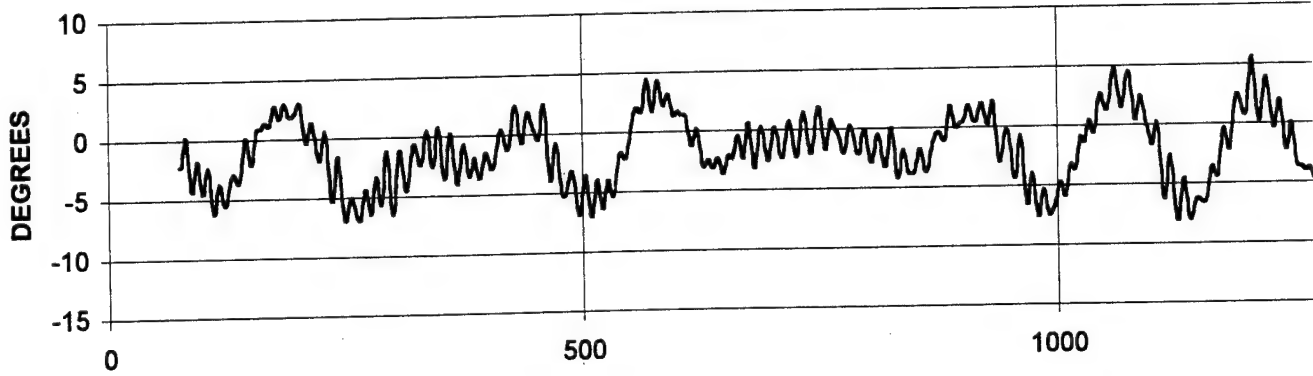
Filtered High Frequency Time History



TEST A909 - BUOY 2 TENSION

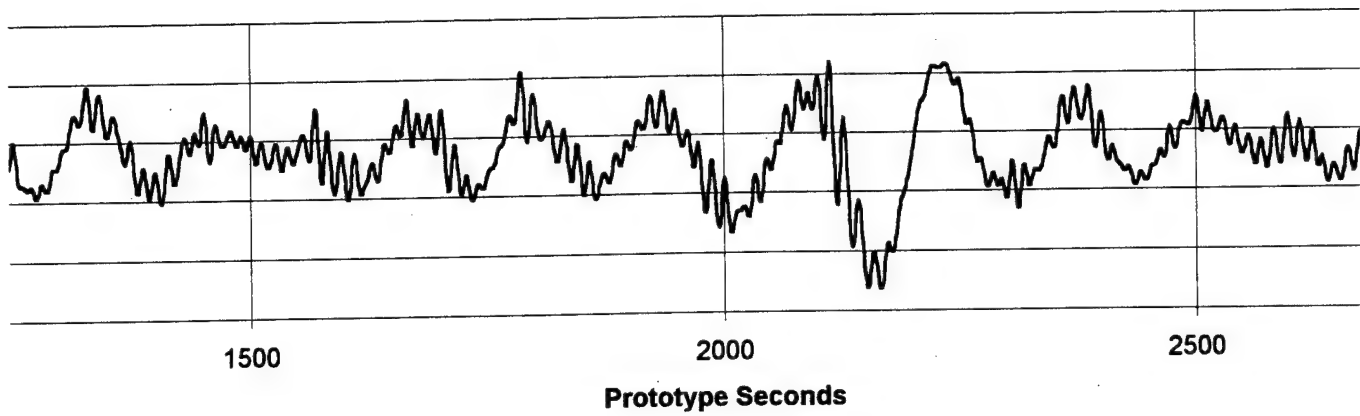


TEST A909 - PITCH

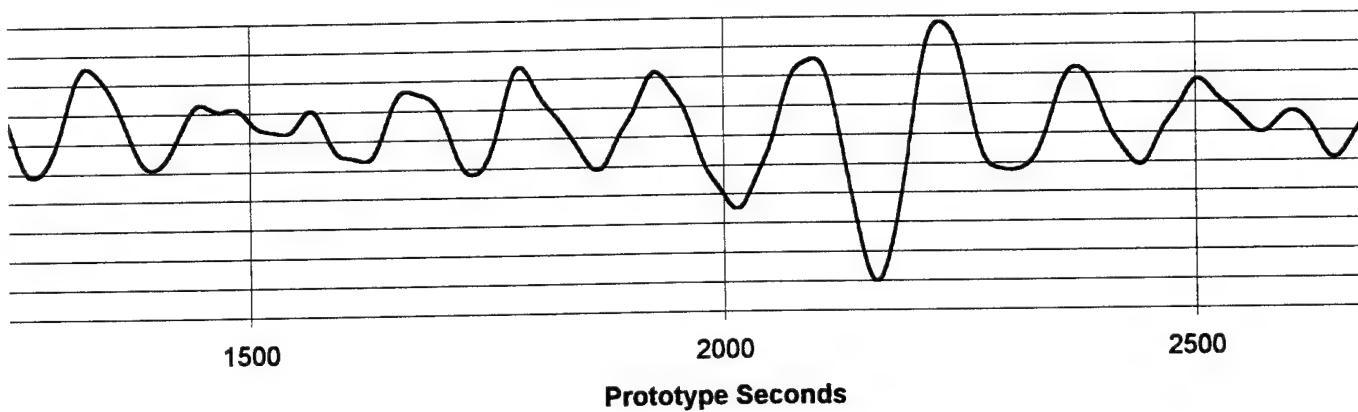


TEST A909 - PITCH

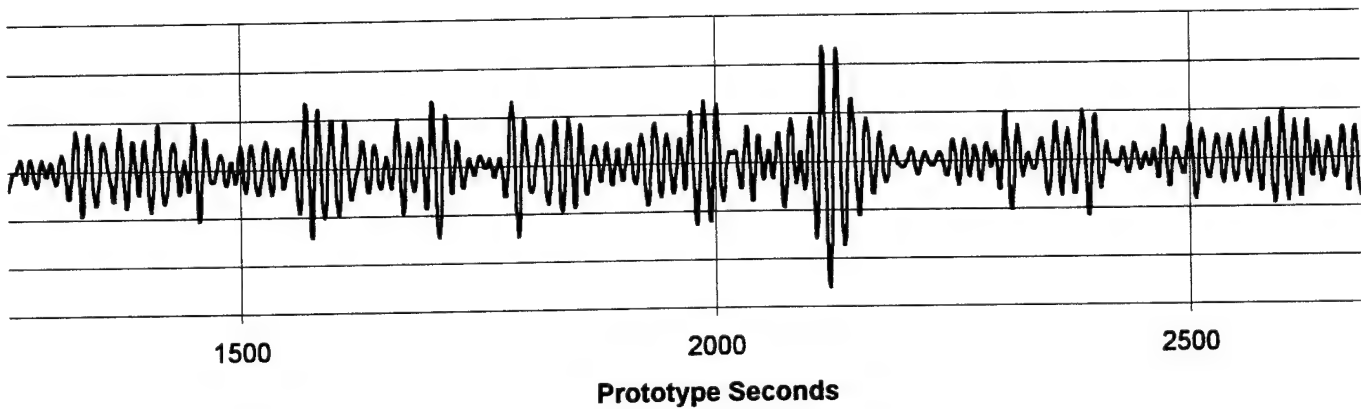
Unfiltered Time History



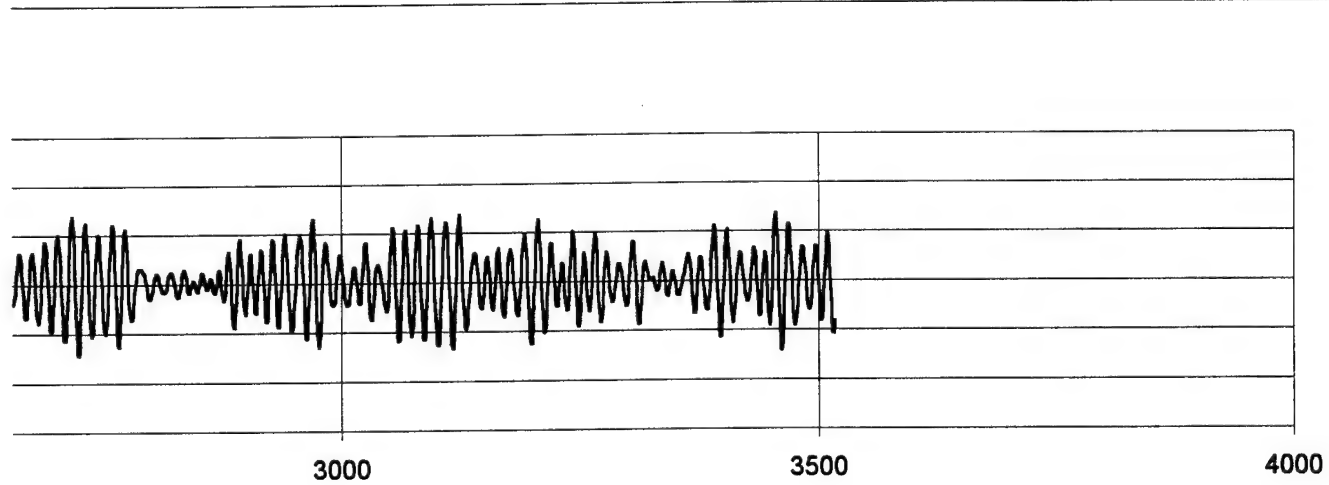
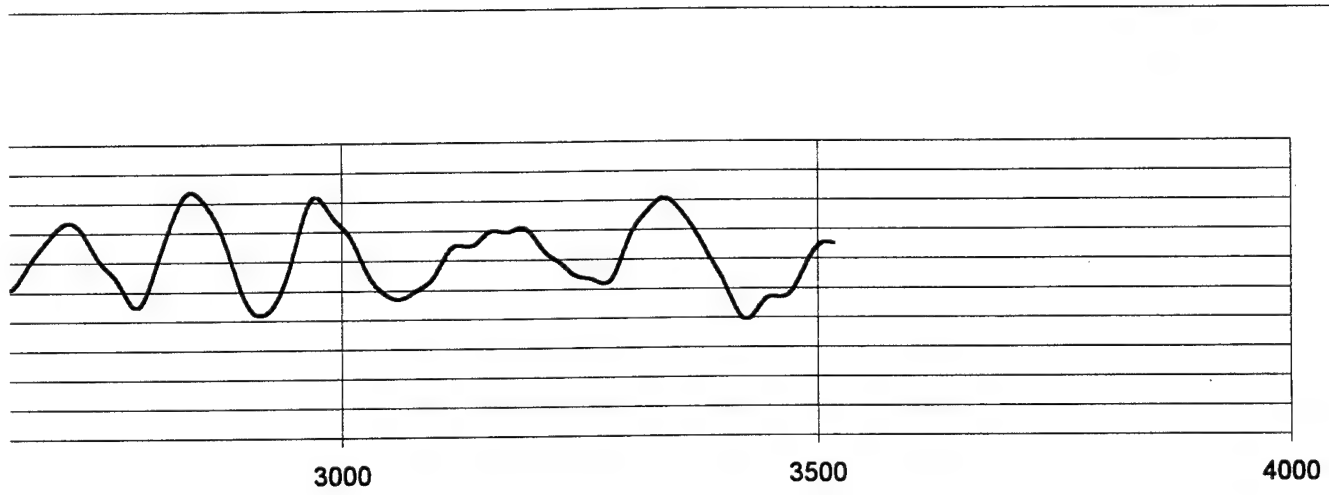
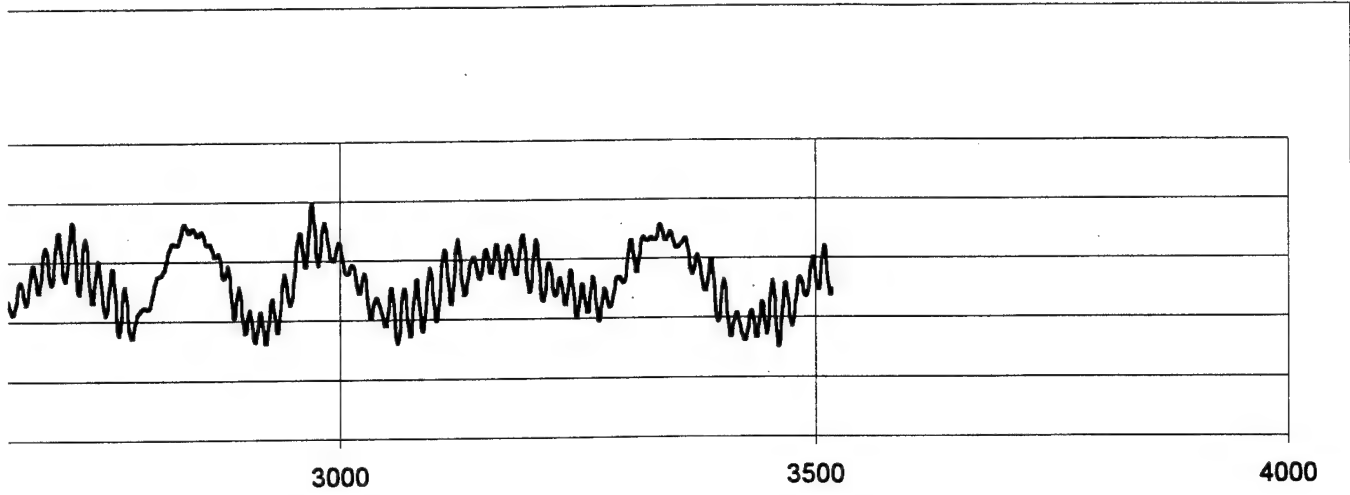
Filtered Low Frequency Time History



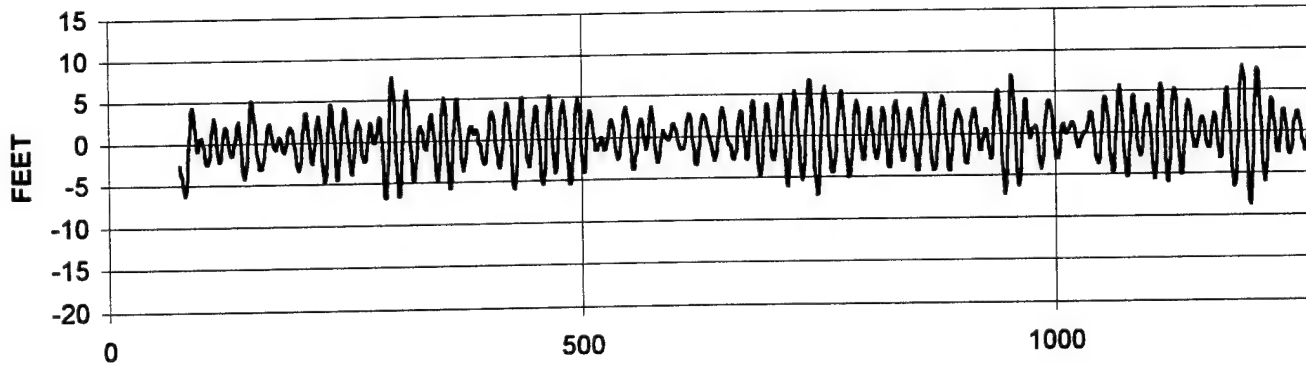
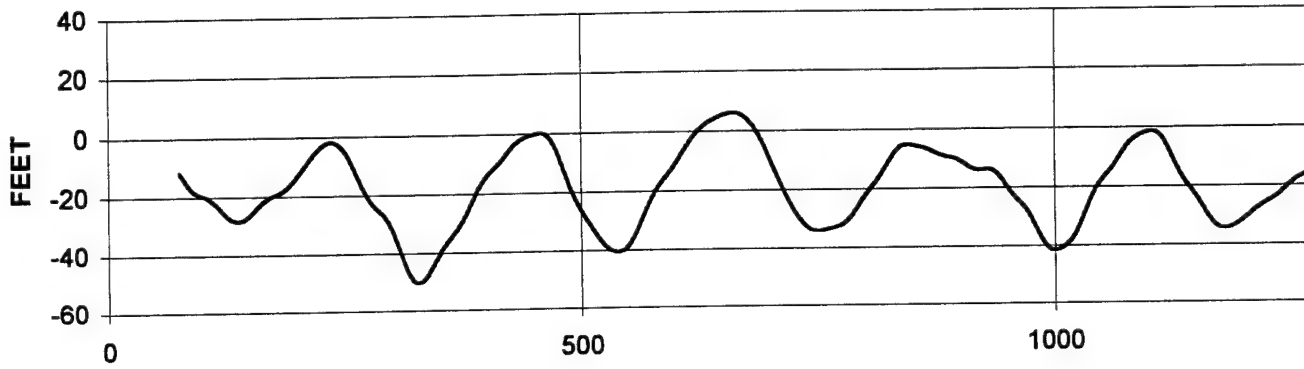
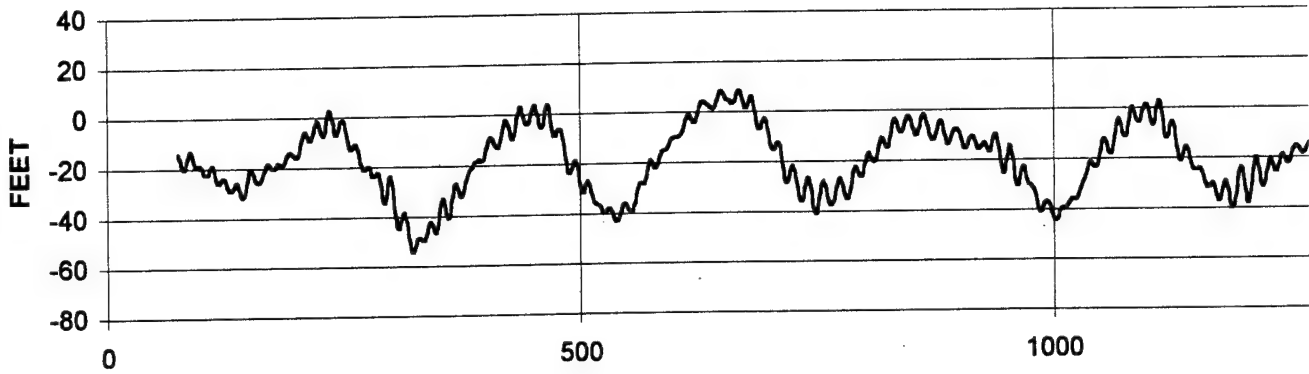
Filtered High Frequency Time History



TEST A909 - PITCH

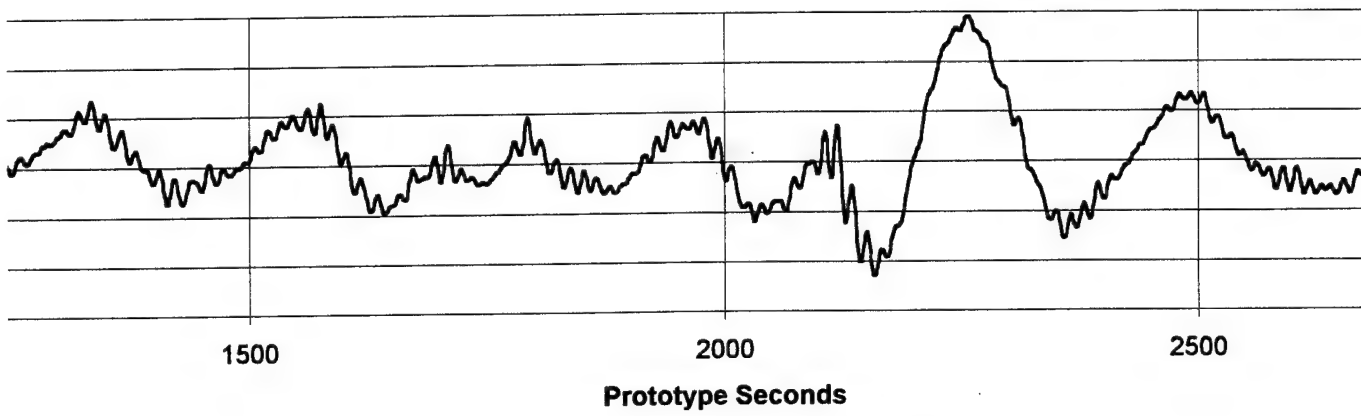


TEST A909 - PT SURGE

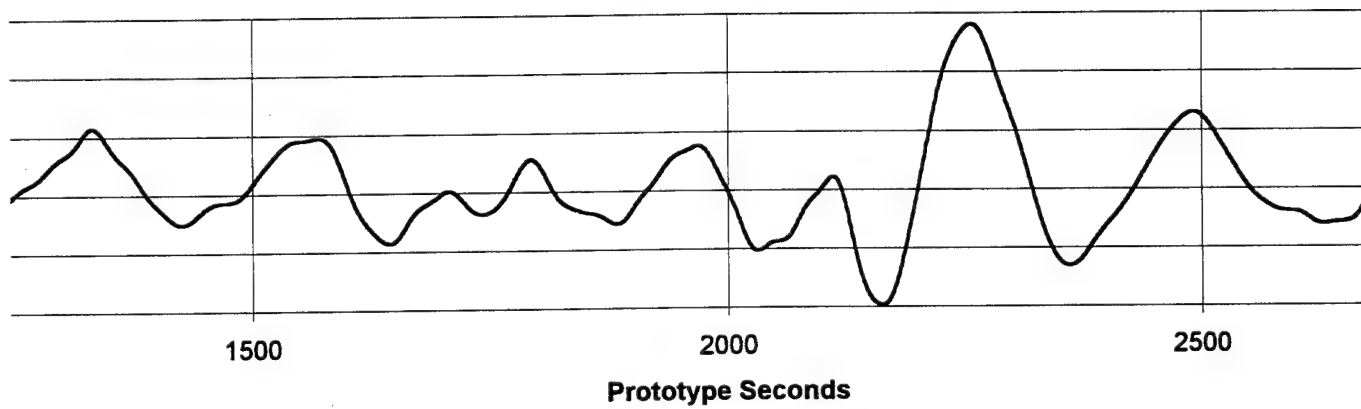


TEST A909 - PT SURGE

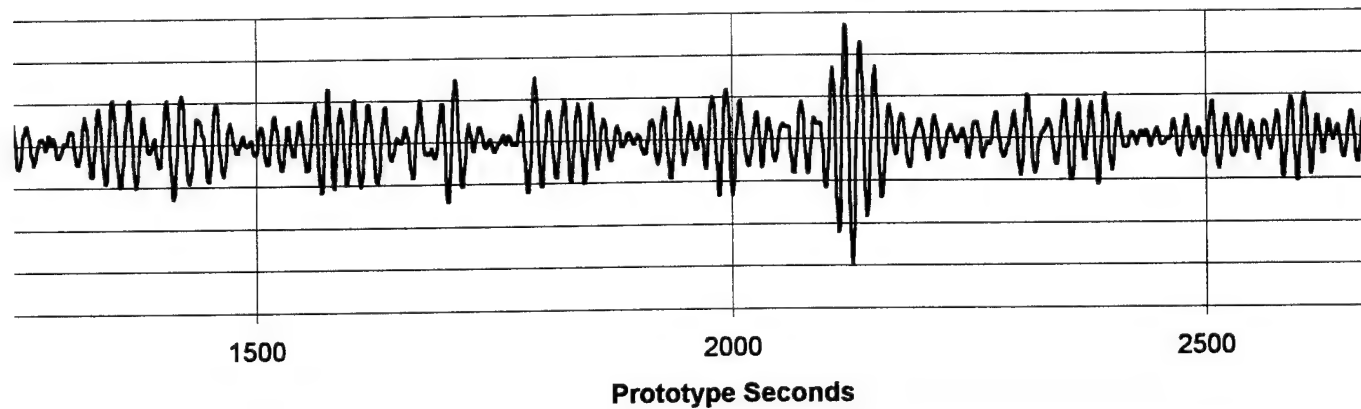
Unfiltered Time History



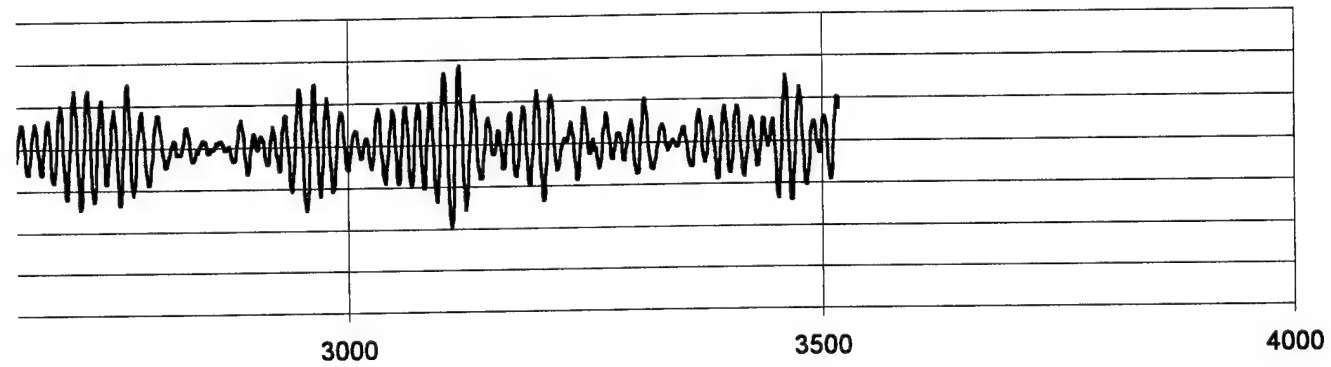
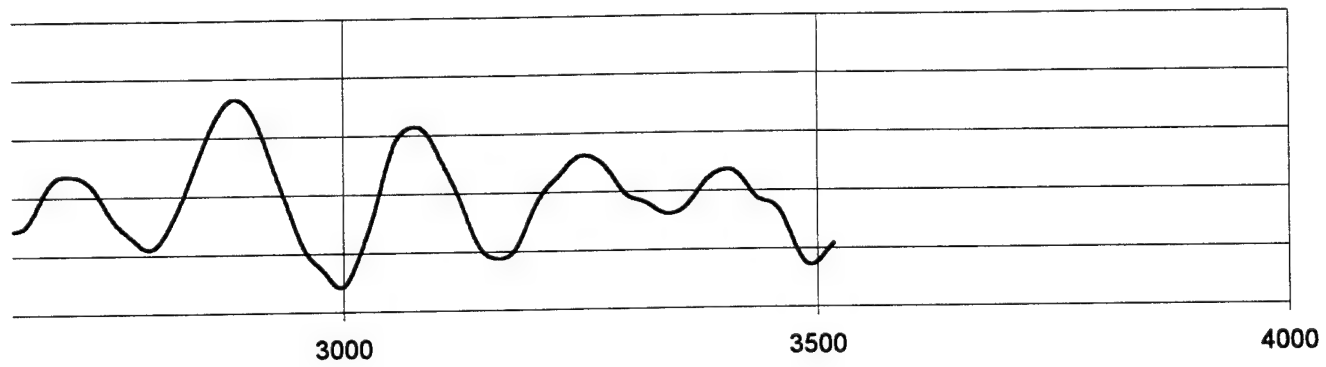
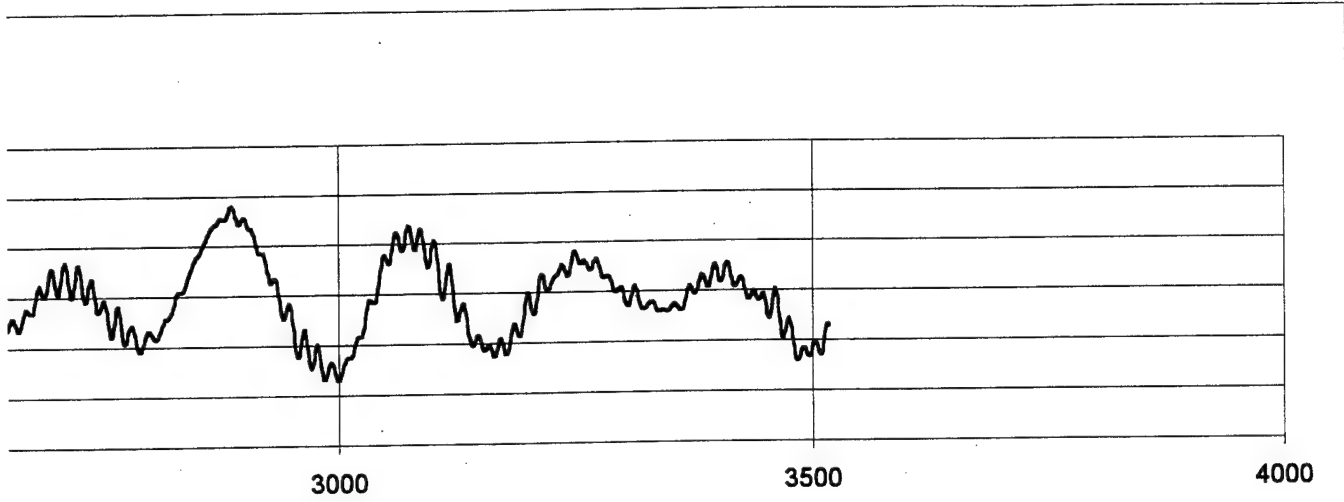
Filtered Low Frequency Time History



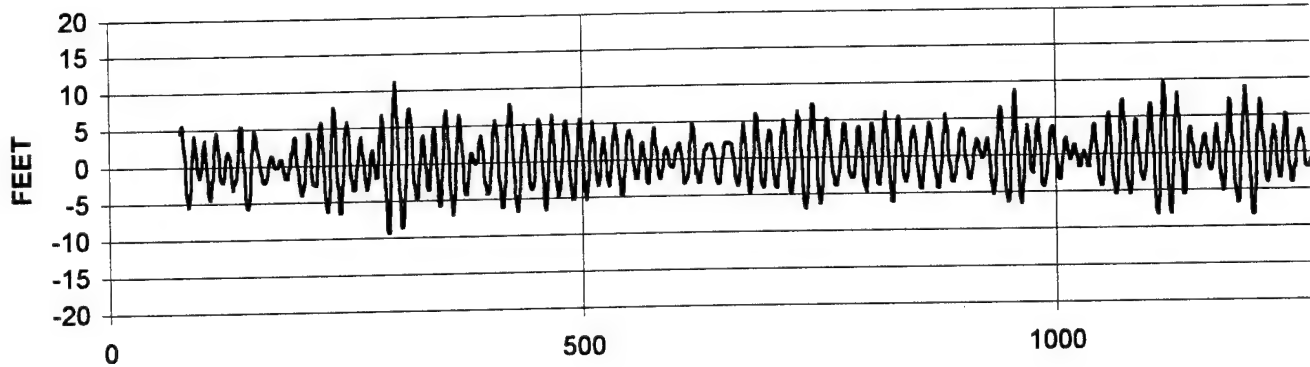
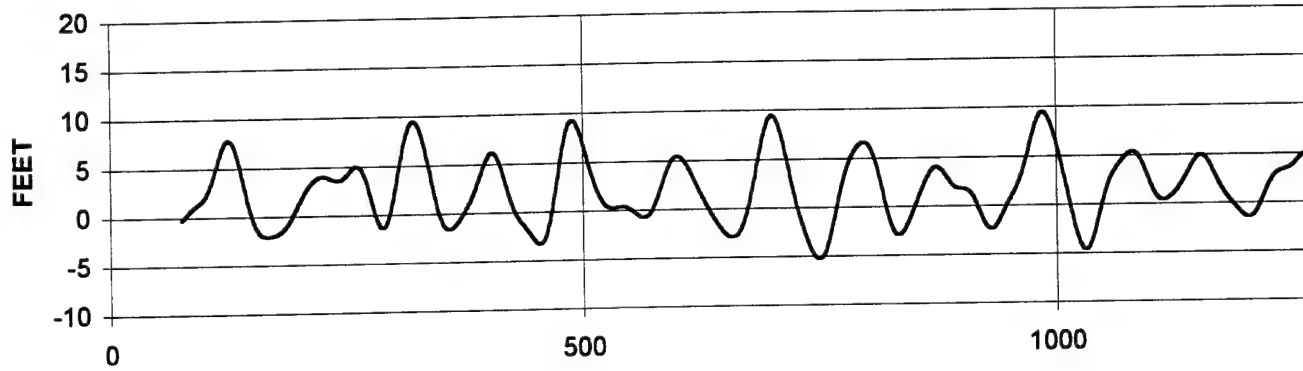
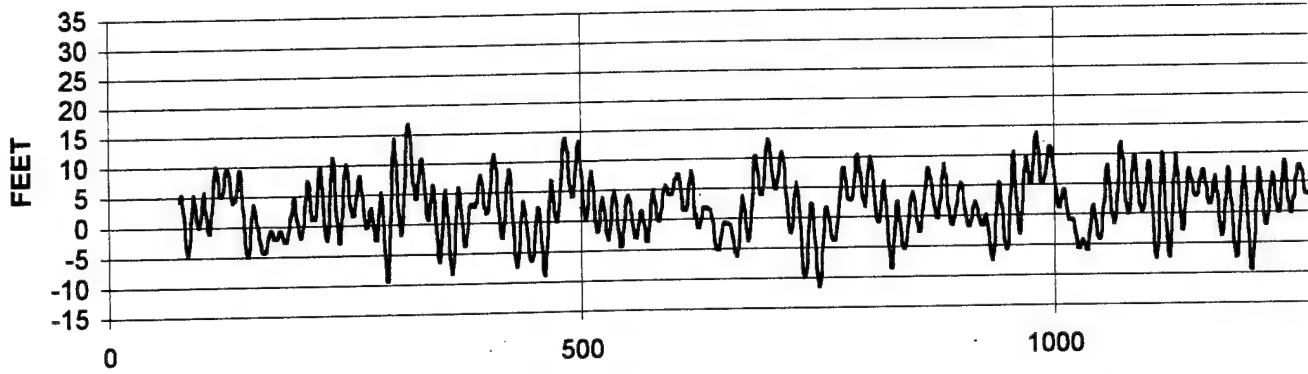
Filtered High Frequency Time History



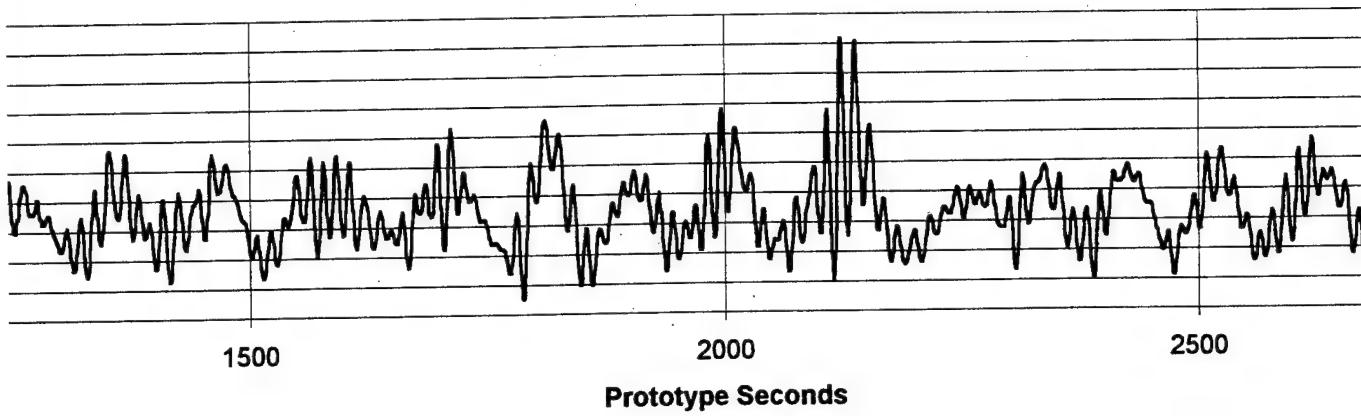
TEST A909 - PT SURGE



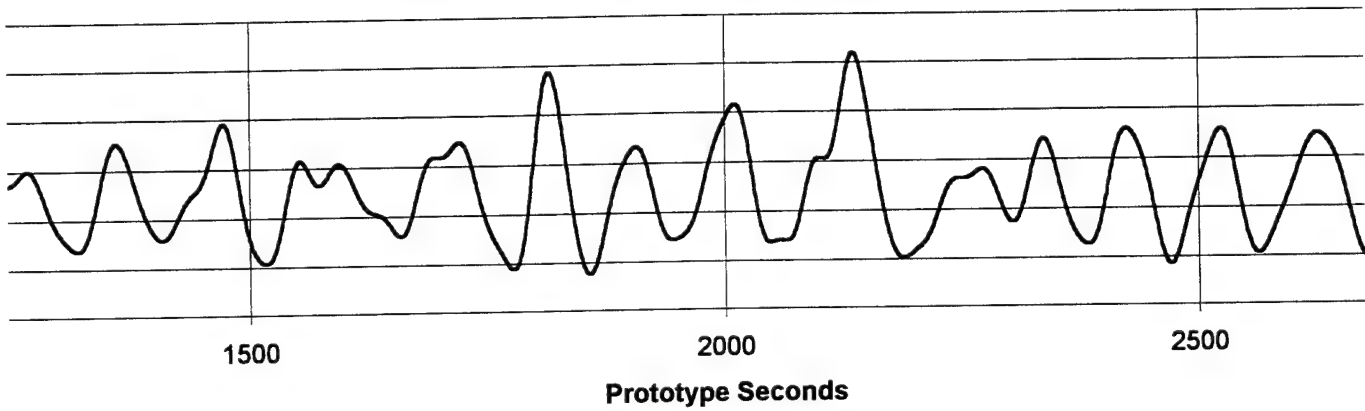
TEST A909 - PT HEAVE



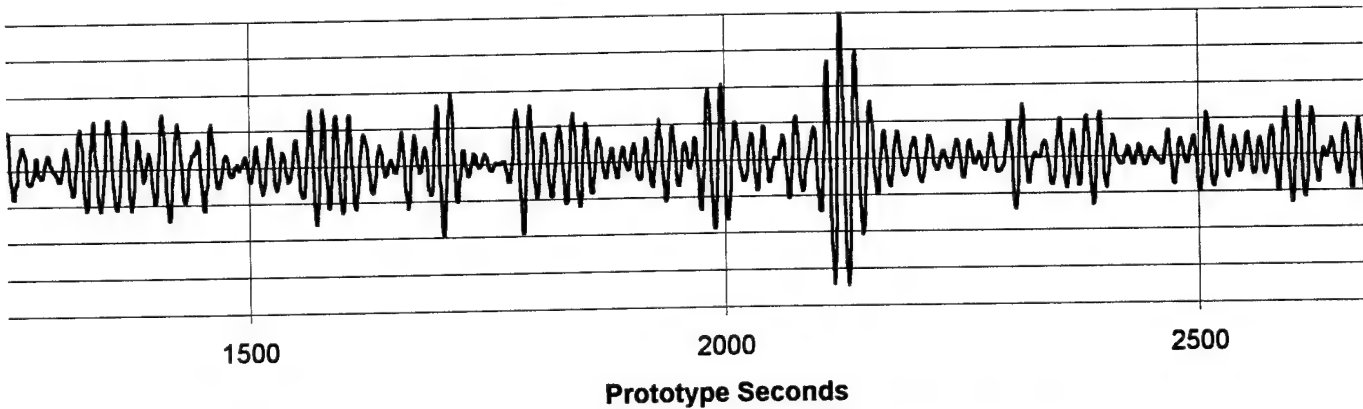
Unfiltered Time History



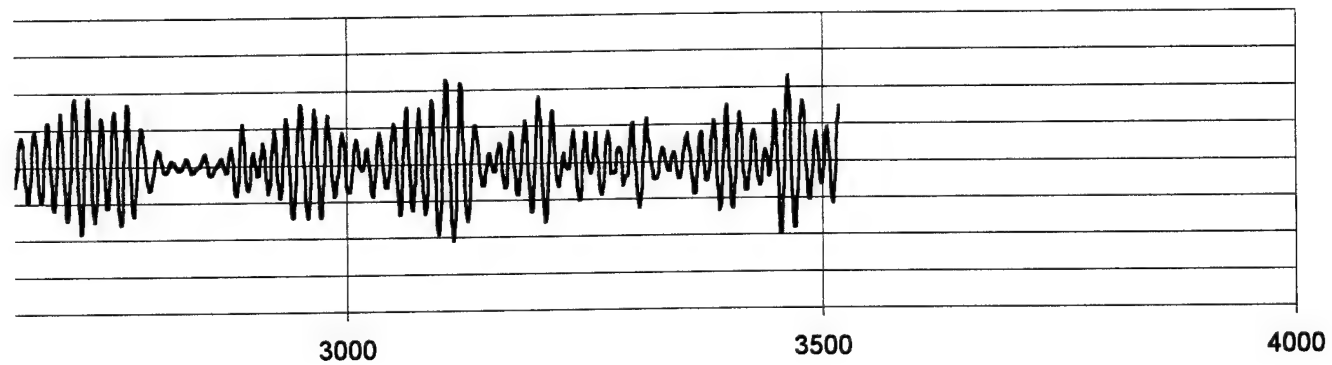
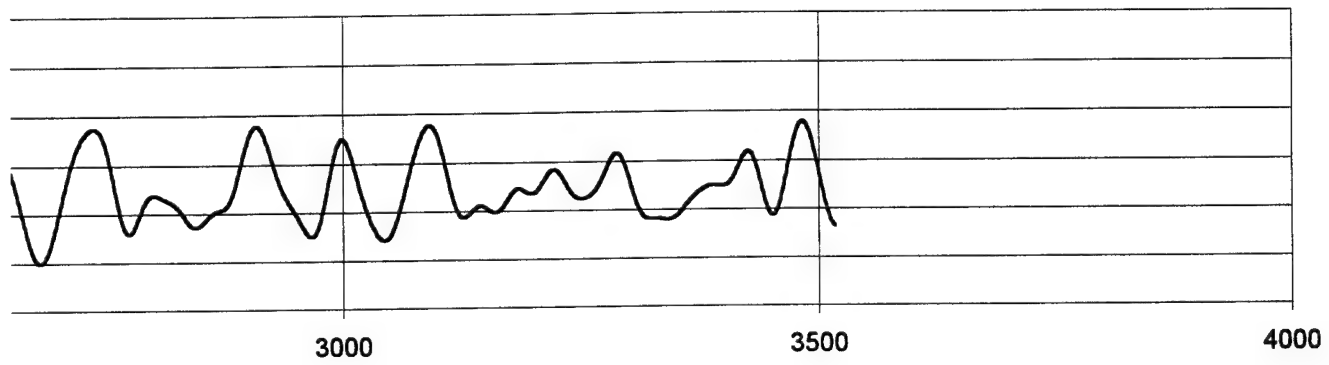
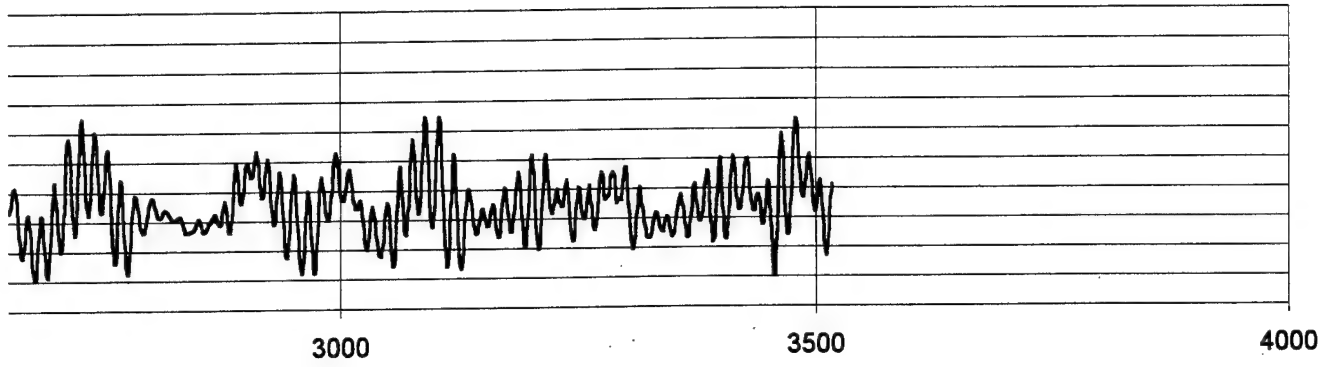
Filtered Low Frequency Time History



Filtered High Frequency Time History

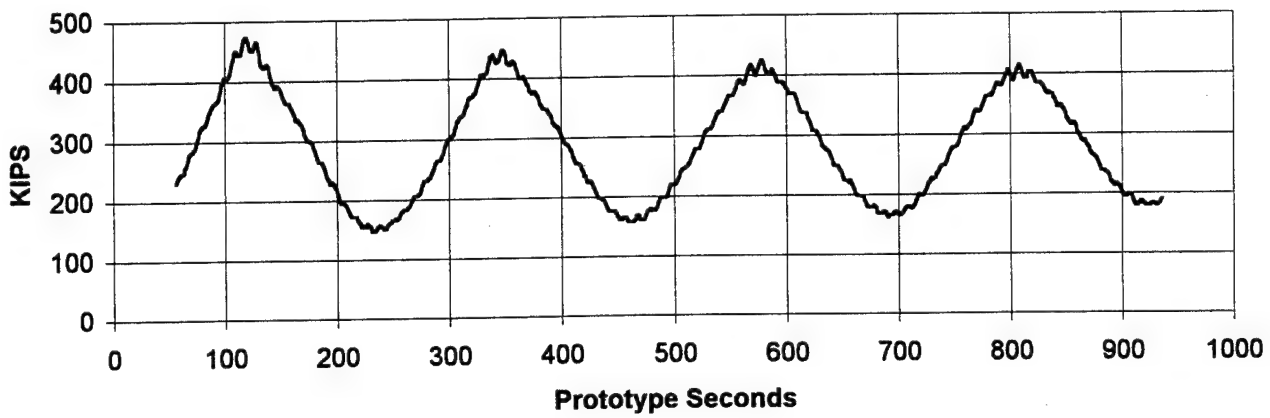


TEST A909 - PT HEAVE

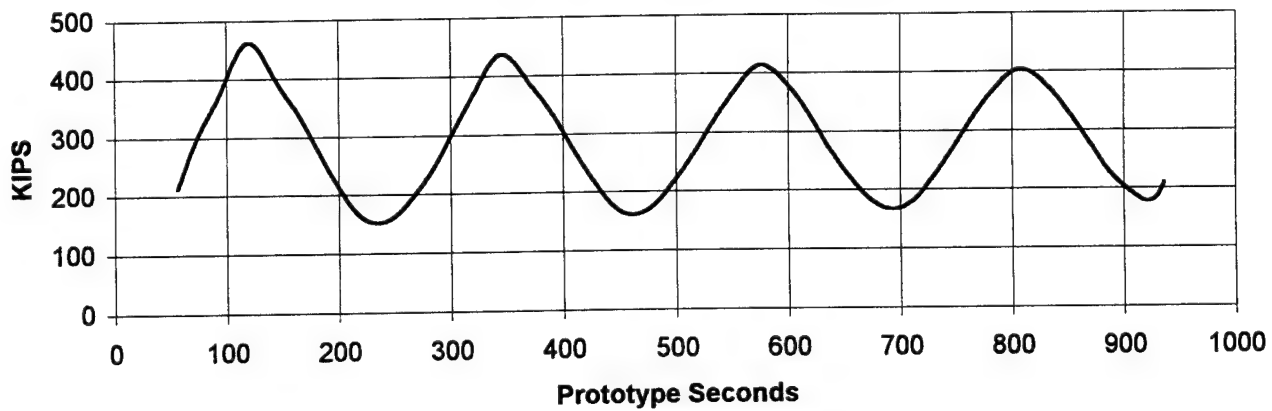


TEST A1003 - ML_1 TENSION

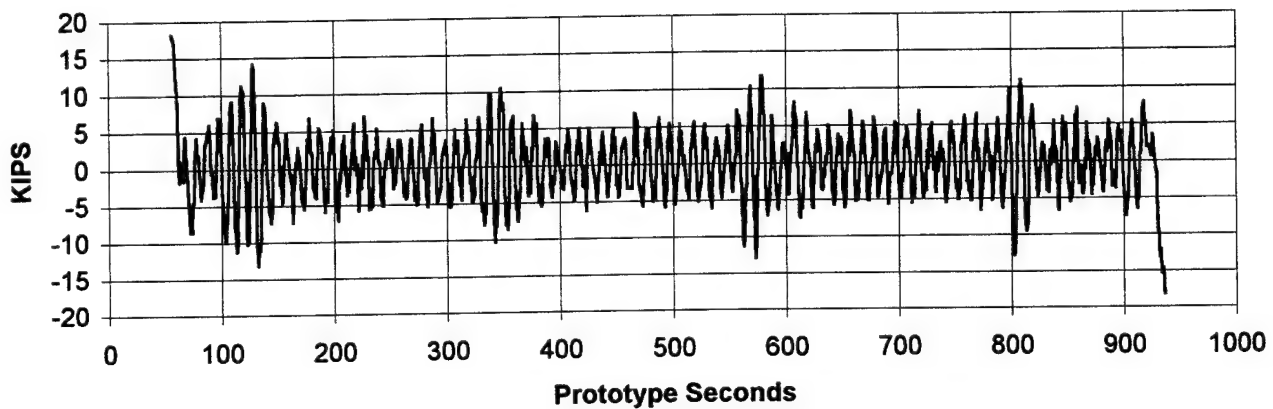
Unfiltered Time History



Filtered Low Frequency Time History

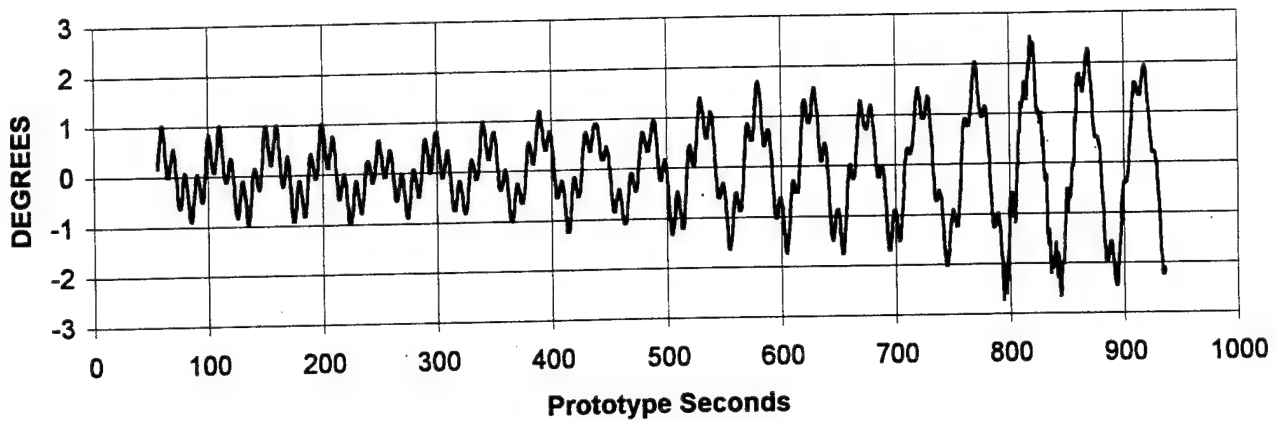


Filtered High Frequency Time History

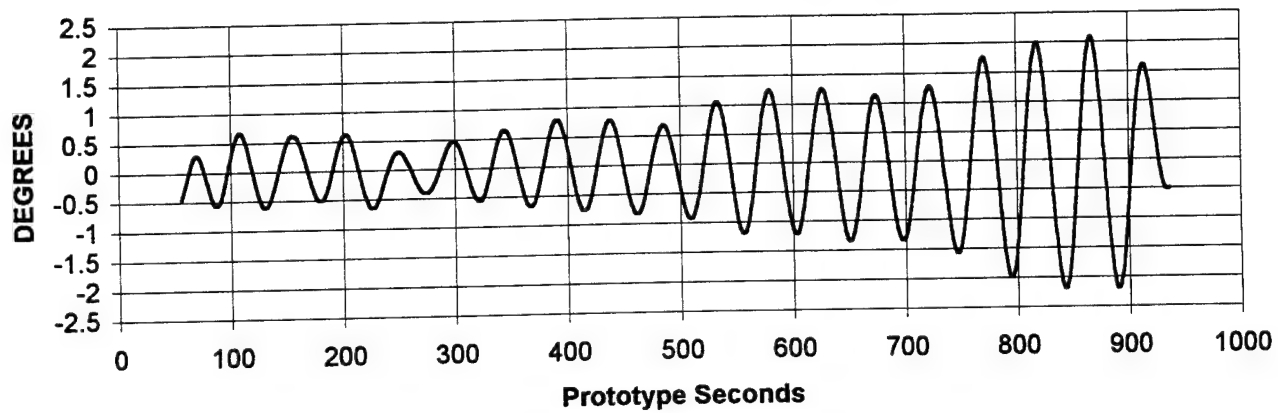


TEST A1003 - PITCH

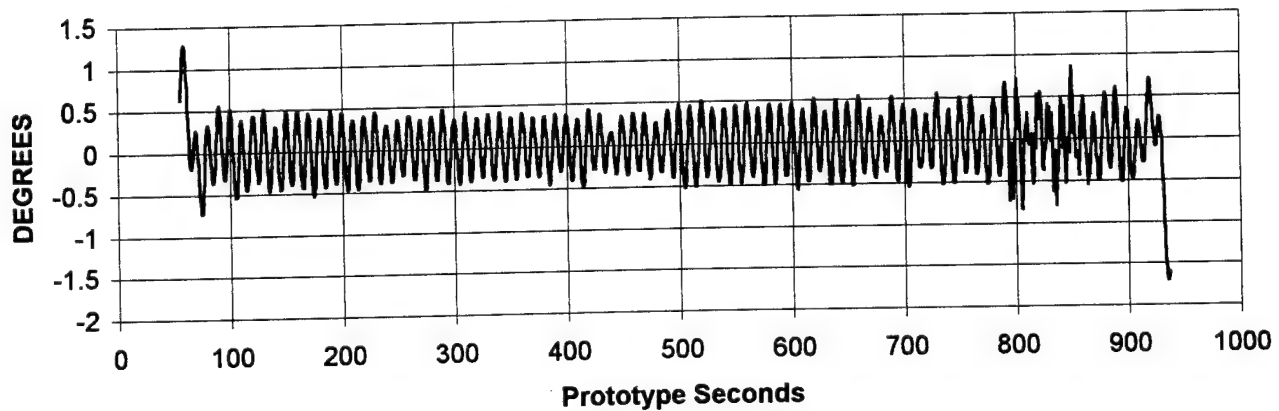
Unfiltered Time History



Filtered Low Frequency Time History

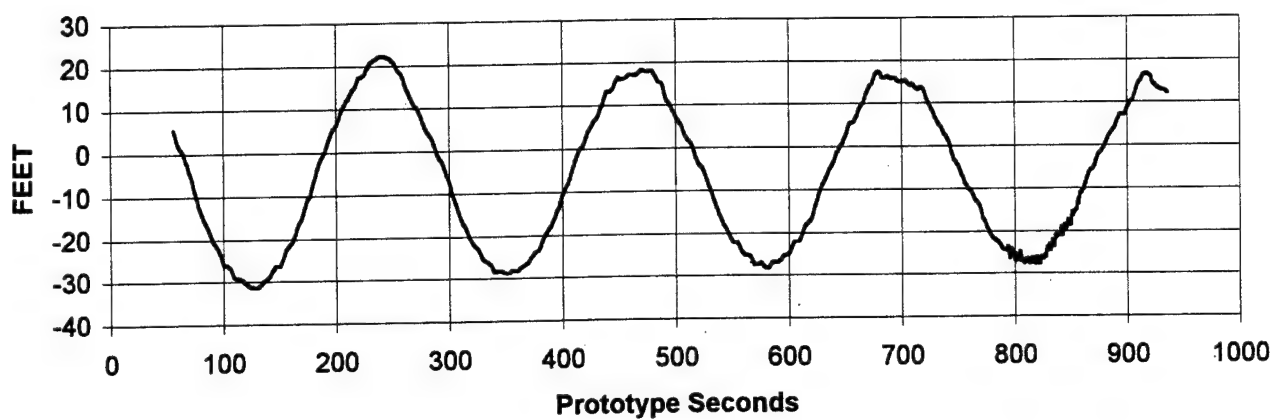


Filtered High Frequency Time History

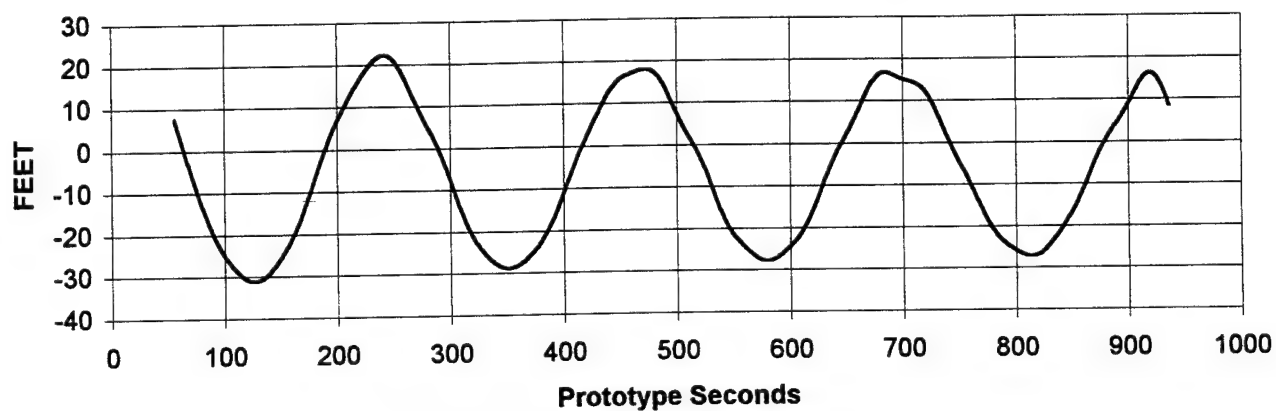


TEST A1003 - PT SURGE

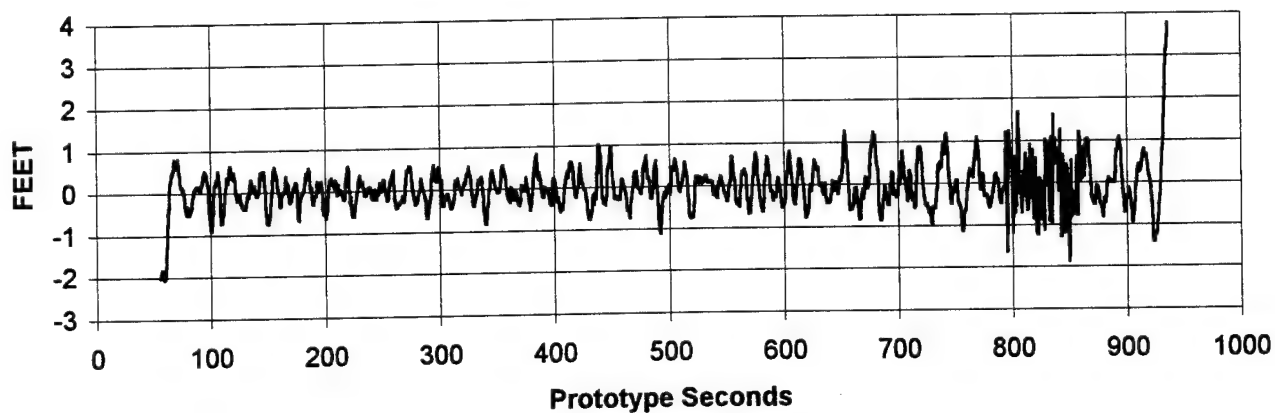
Unfiltered Time History



Filtered Low Frequency Time History

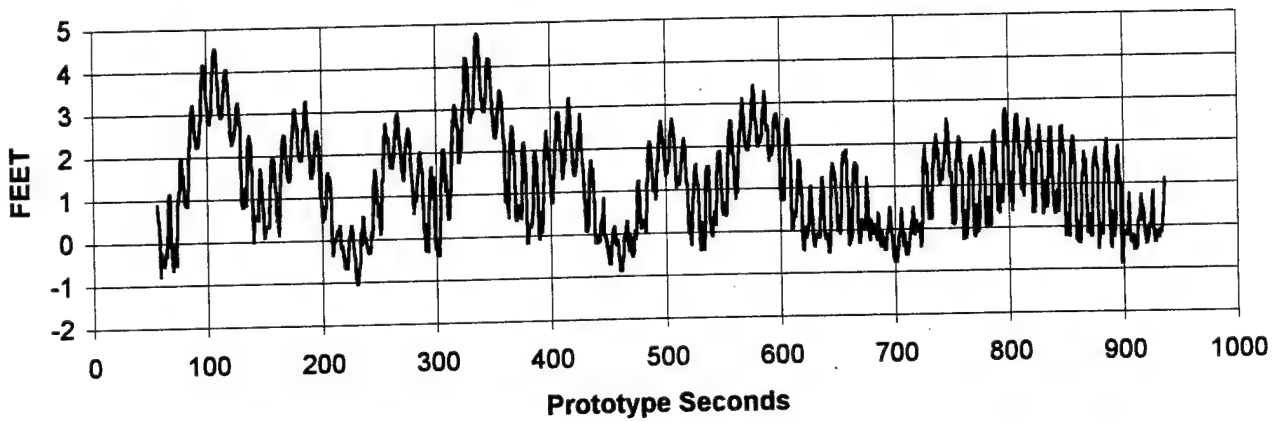


Filtered High Frequency Time History

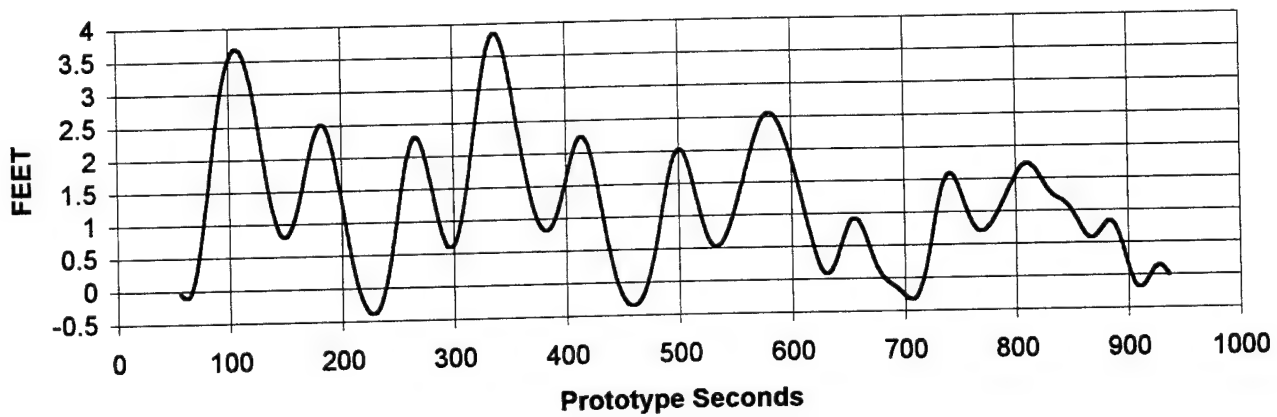


TEST A1003 - PT HEAVE

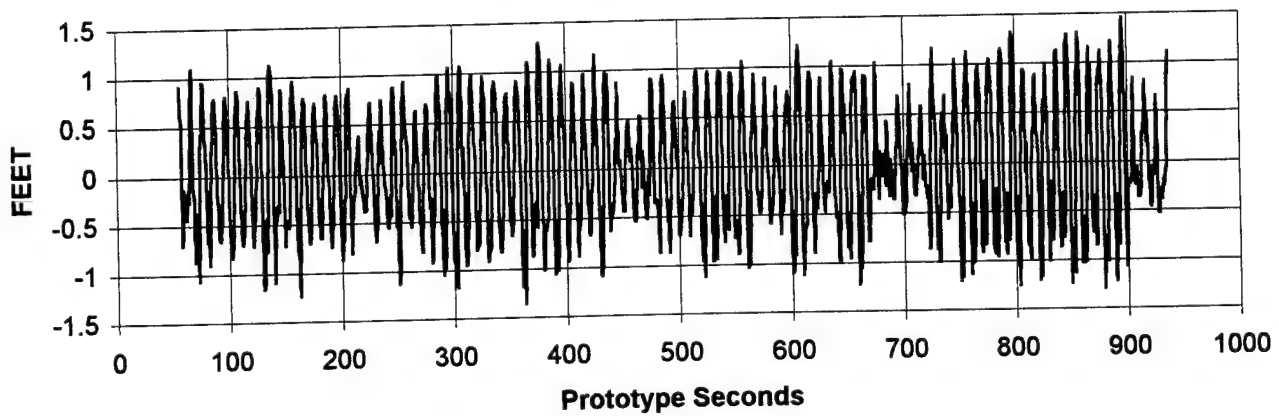
Unfiltered Time History



Filtered Low Frequency Time History

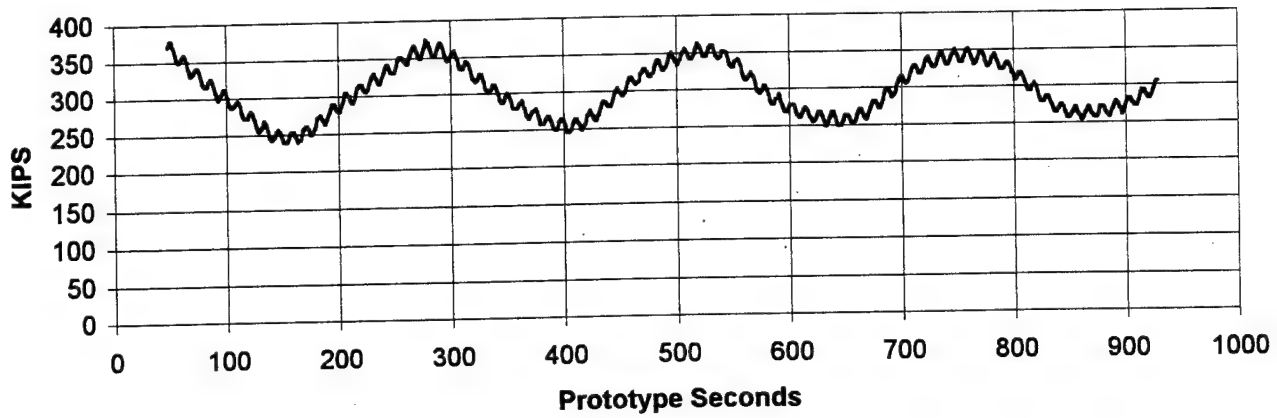


Filtered High Frequency Time History

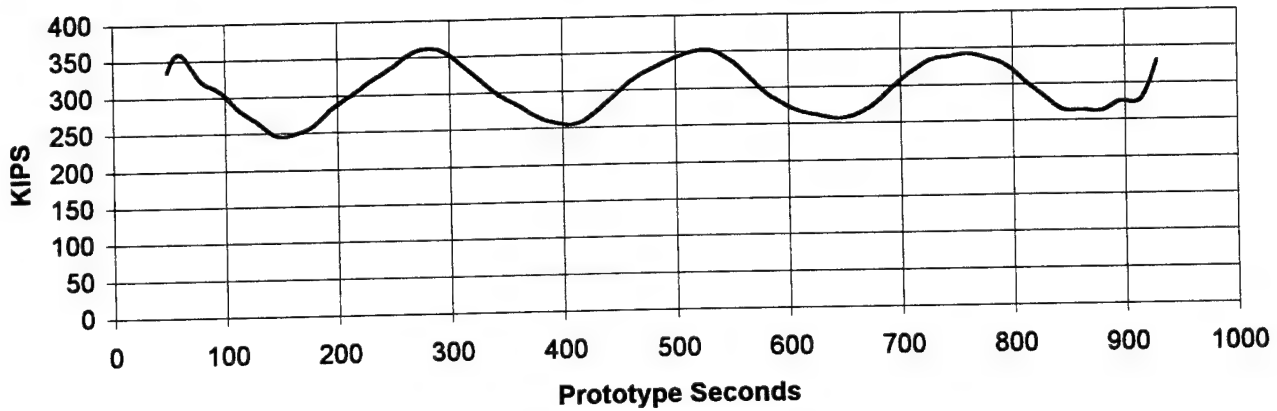


TEST A1004 - ML_1 TENSION

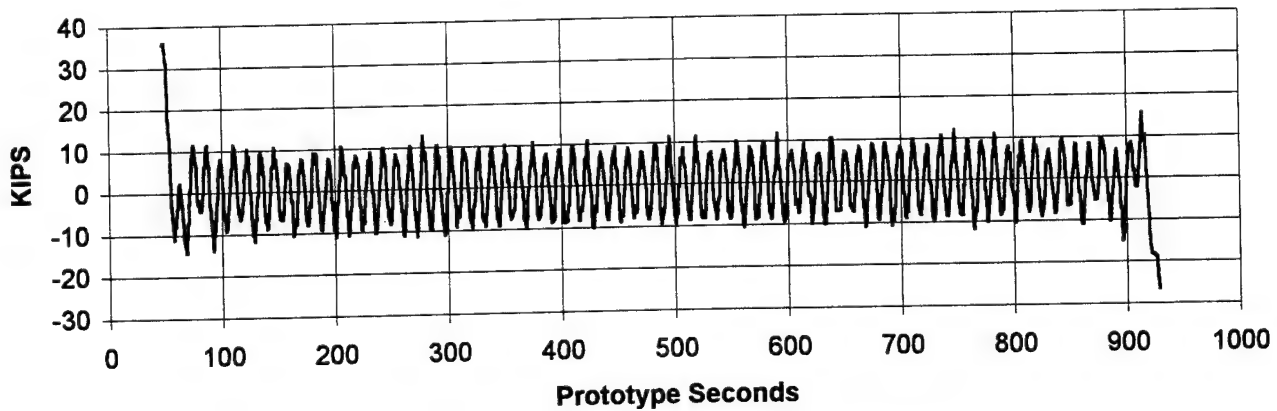
Unfiltered Time History



Filtered Low Frequency Time History

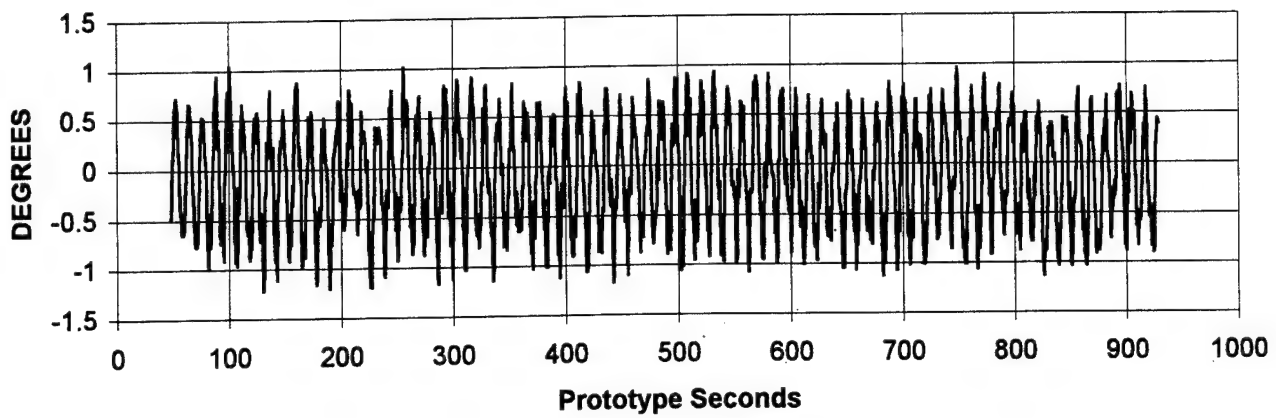


Filtered High Frequency Time History

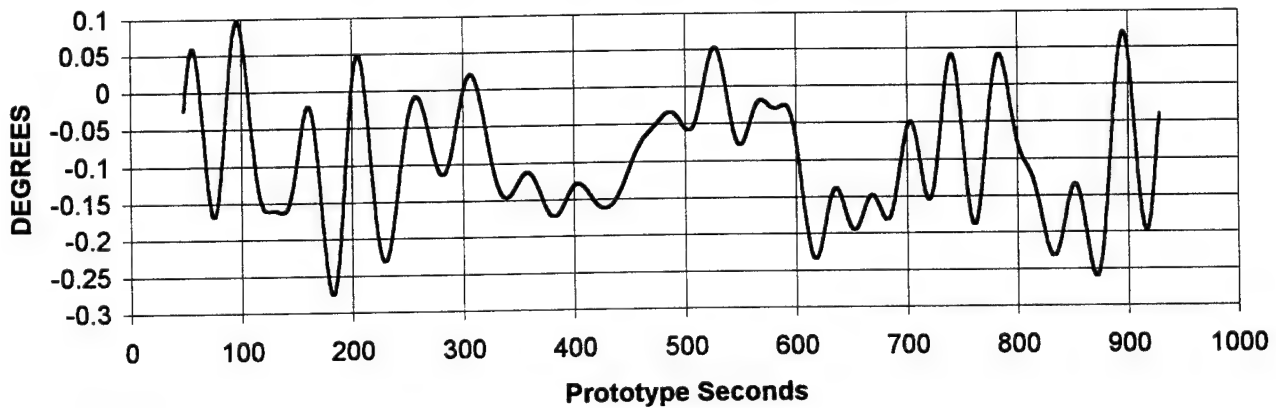


TEST A1004 - PITCH

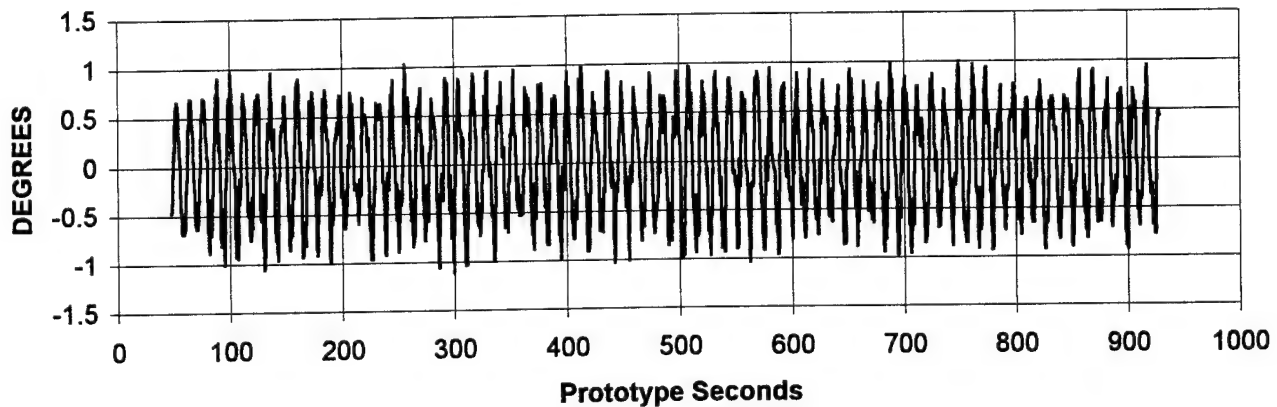
Unfiltered Time History



Filtered Low Frequency Time History

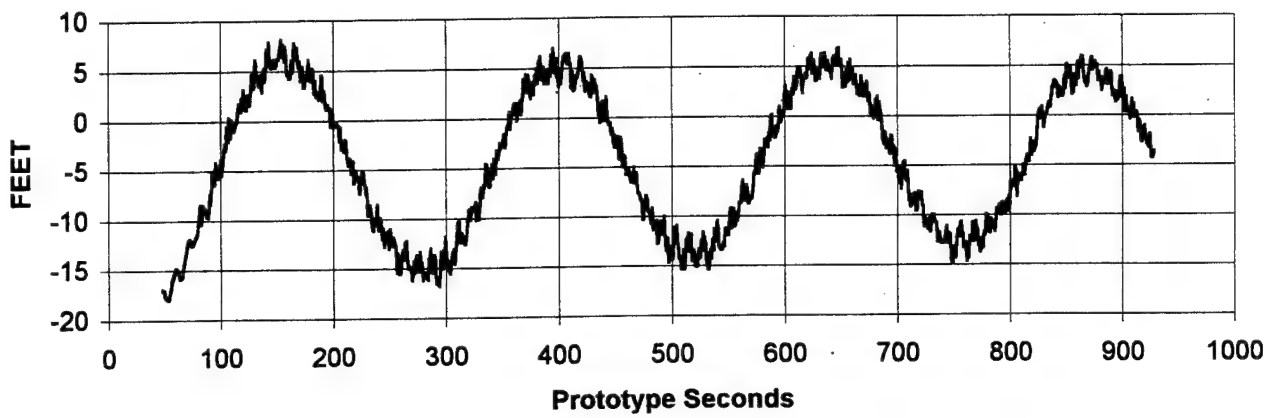


Filtered High Frequency Time History

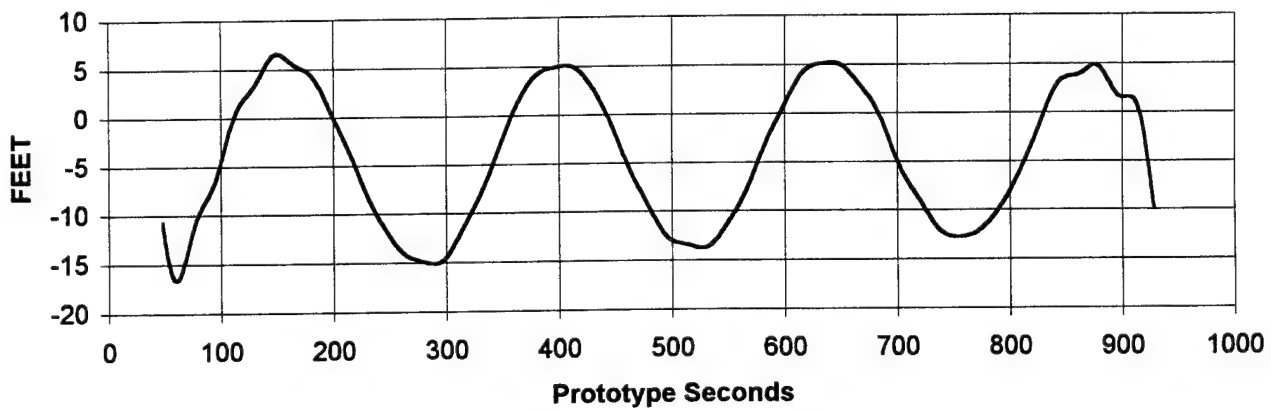


TEST A1004 - PT SURGE

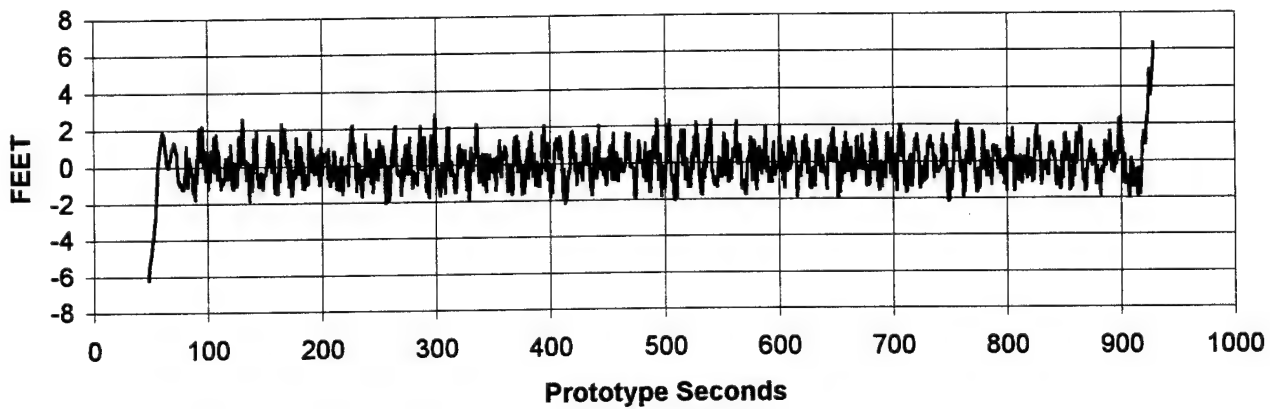
Unfiltered Time History



Filtered Low Frequency Time History

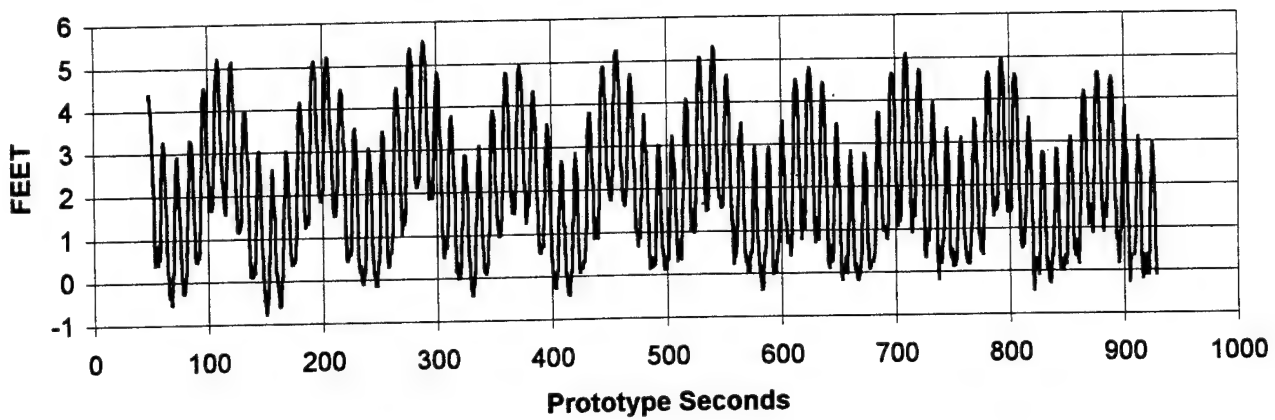


Filtered High Frequency Time History

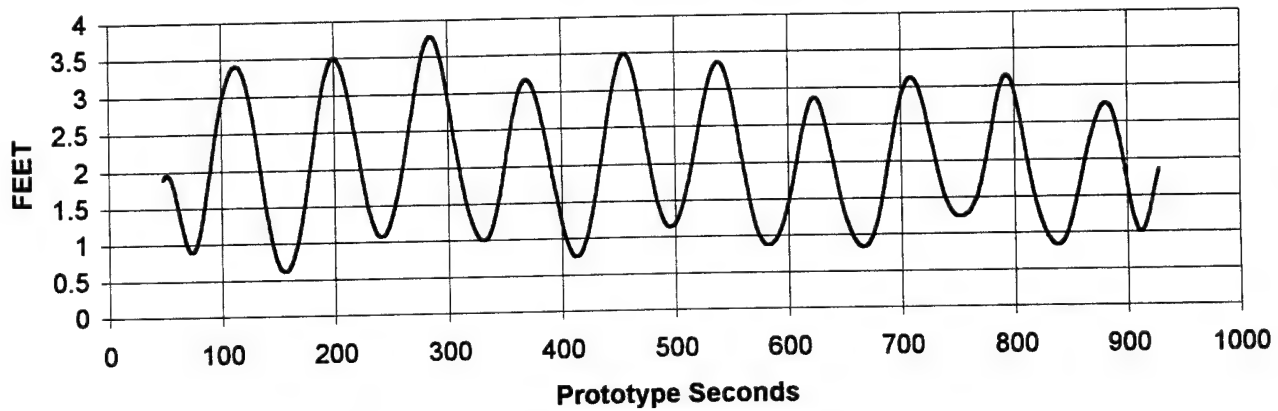


TEST A1004 - PT HEAVE

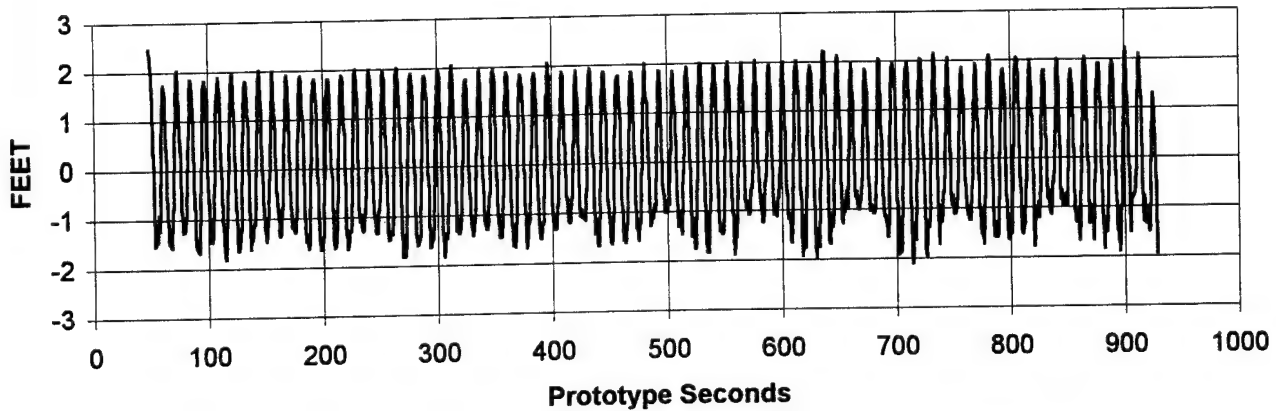
Unfiltered Time History



Filtered Low Frequency Time History

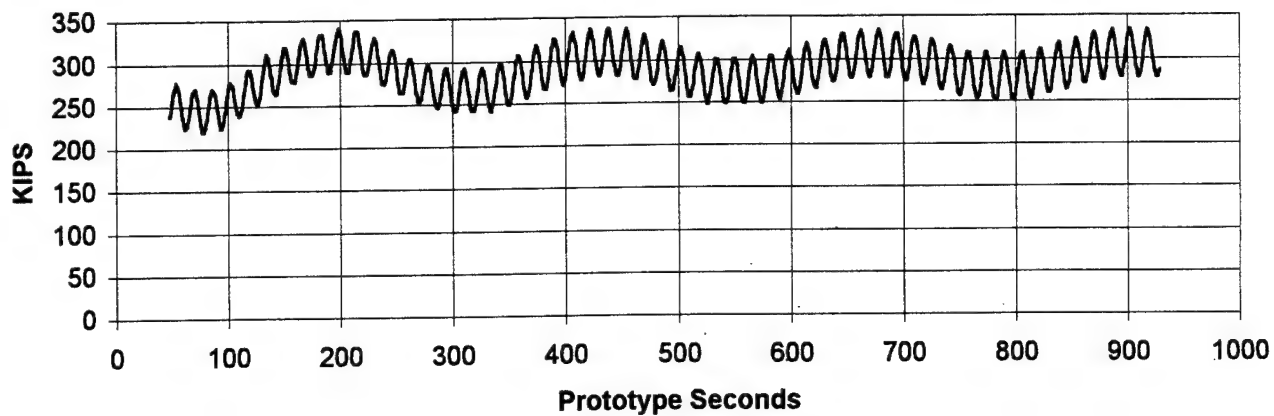


Filtered High Frequency Time History

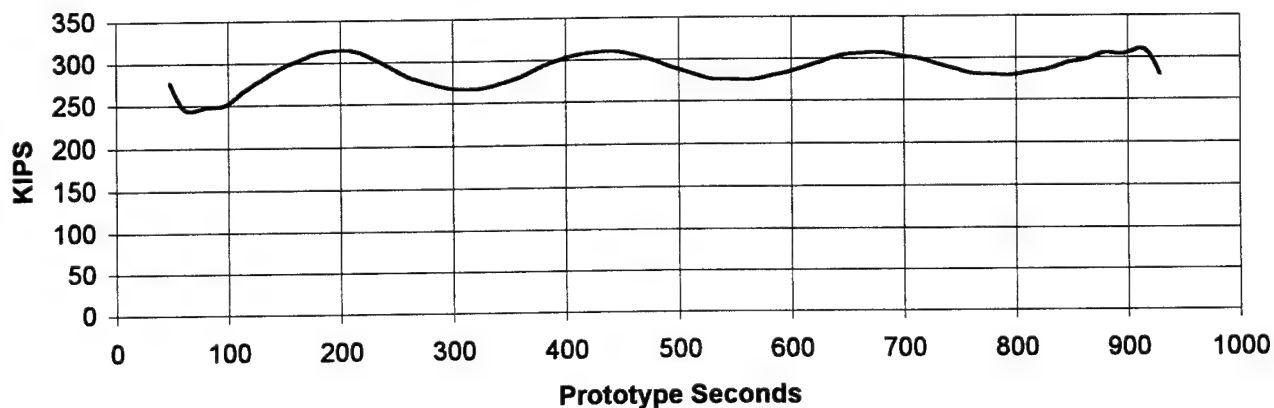


TEST A1005 - ML_1 TENSION

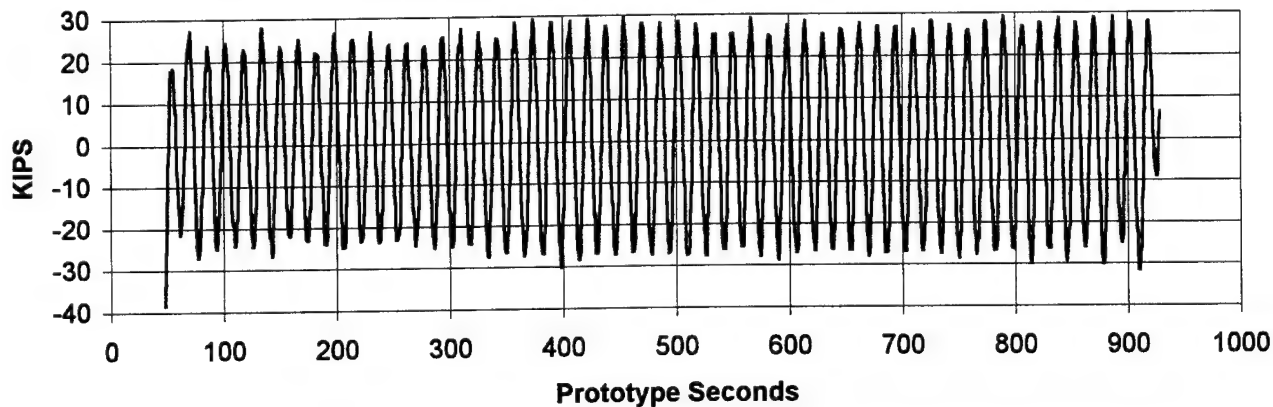
Unfiltered Time History



Filtered Low Frequency Time History

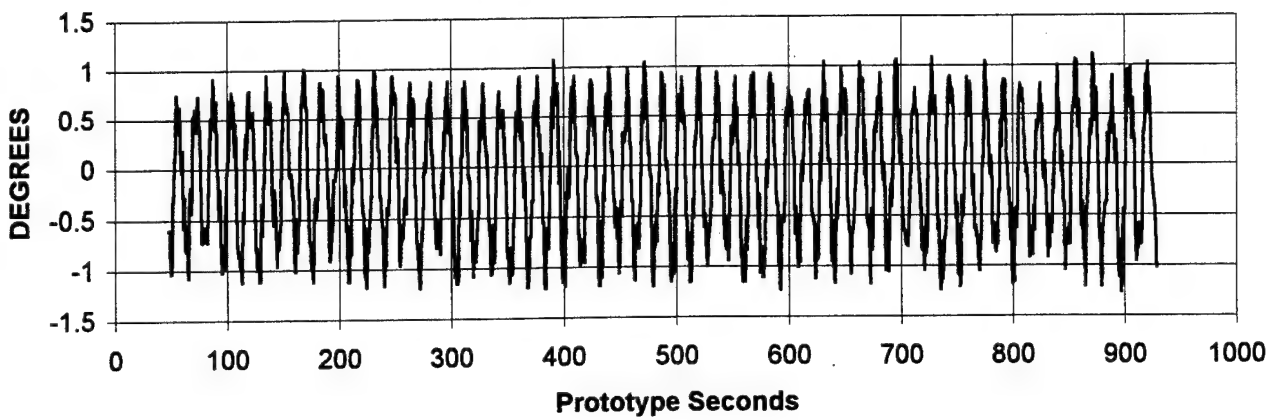


Filtered High Frequency Time History

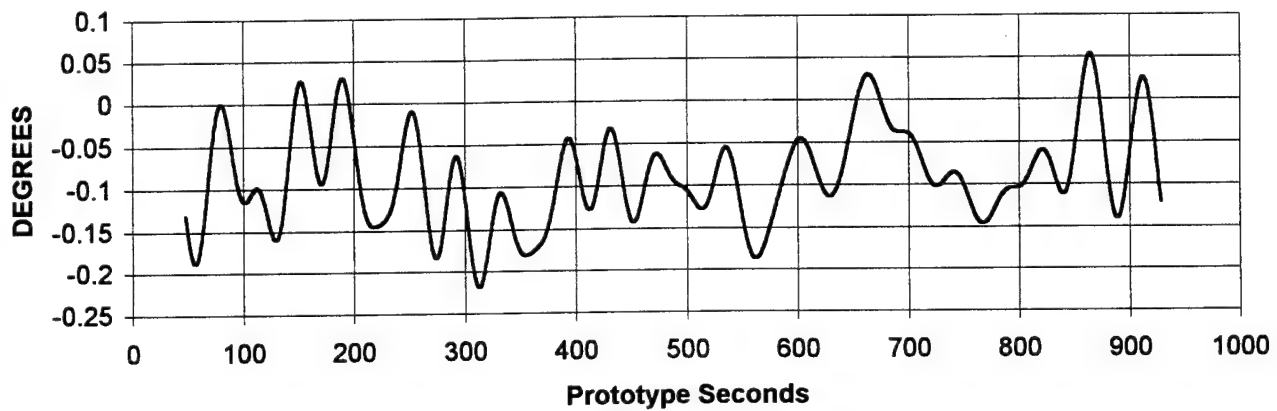


TEST A1005 - PITCH

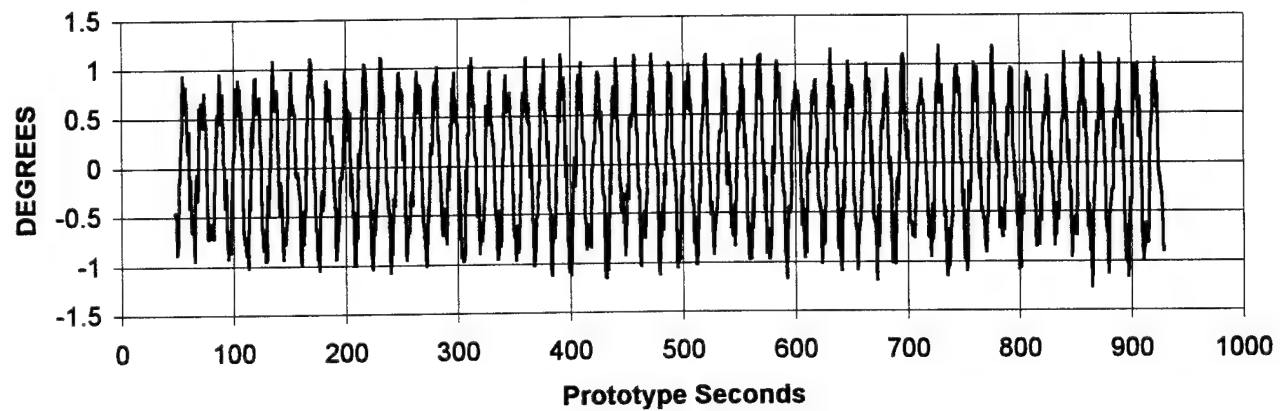
Unfiltered Time History



Filtered Low Frequency Time History

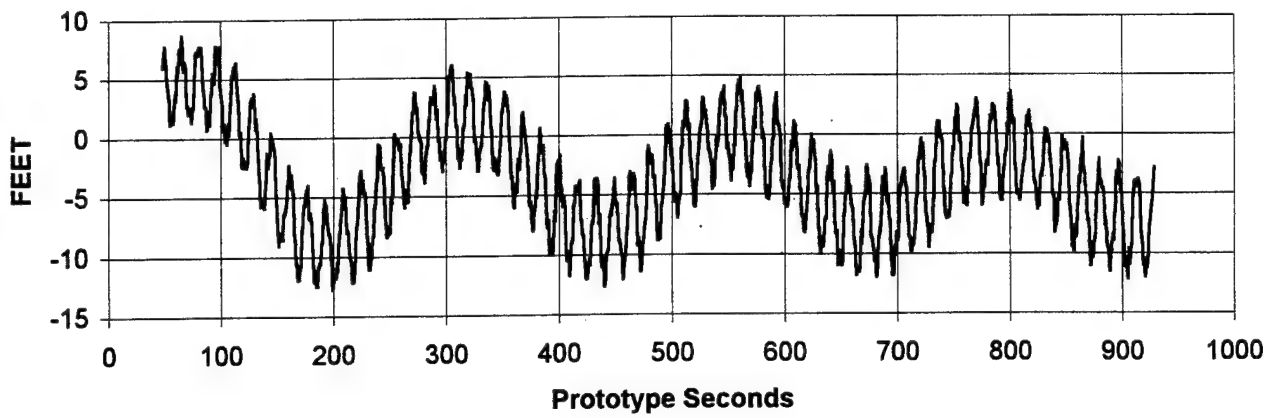


Filtered High Frequency Time History

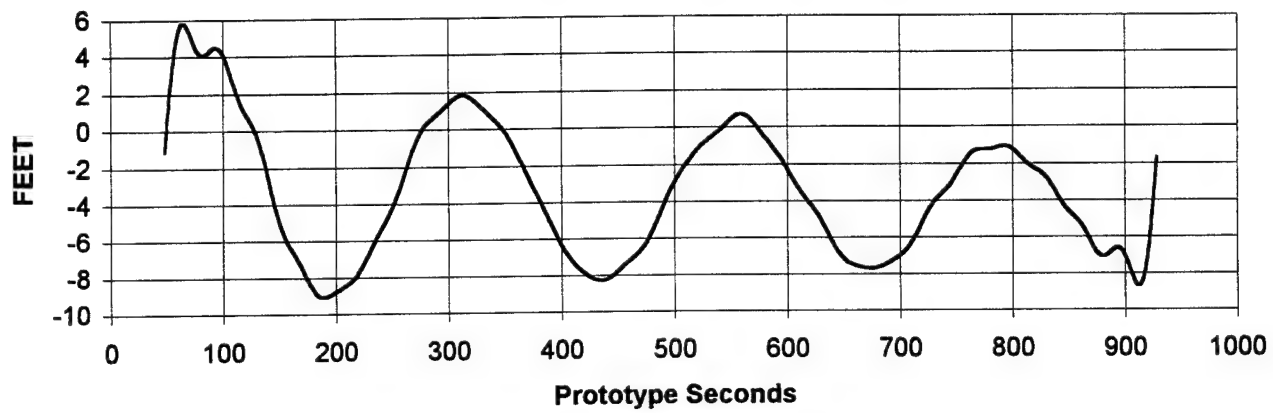


TEST A1005 - PT SURGE

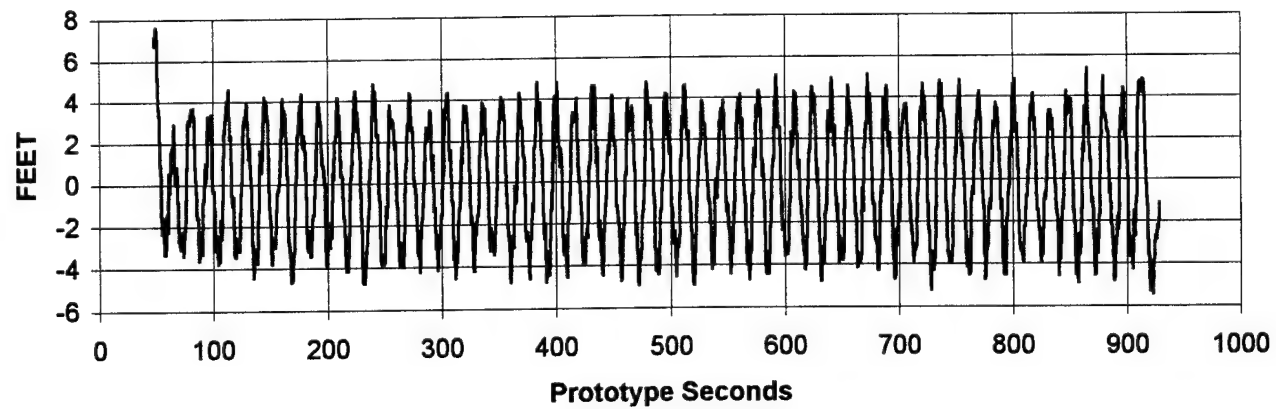
Unfiltered Time History



Filtered Low Frequency Time History

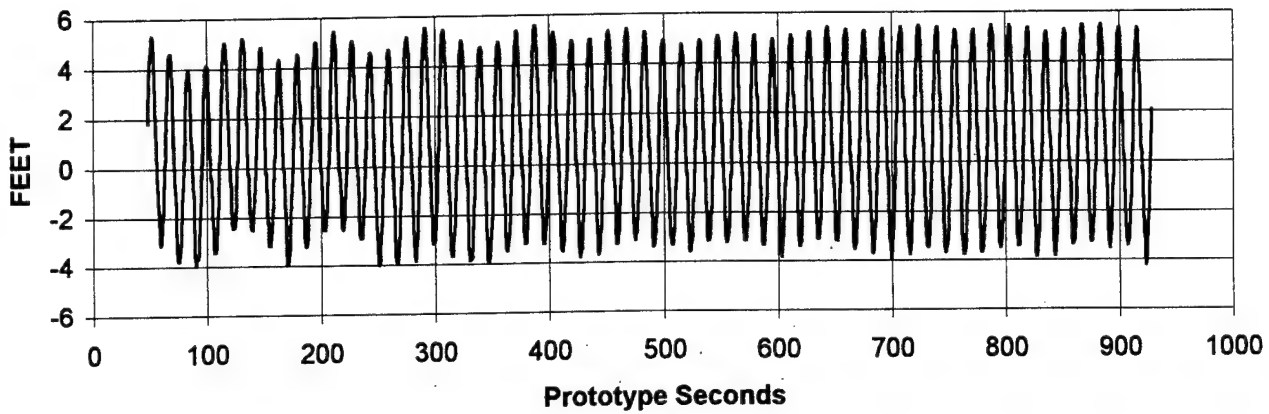


Filtered High Frequency Time History

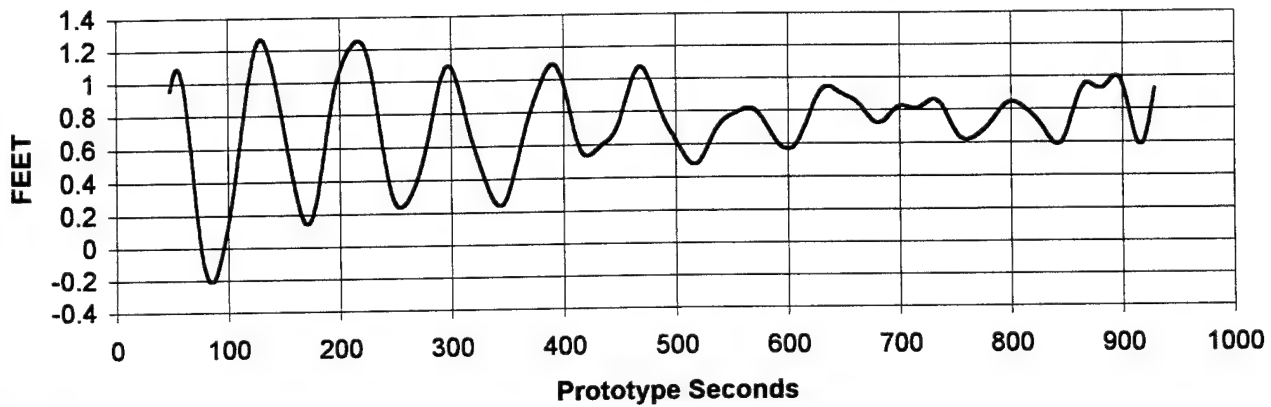


TEST A1005 - PT HEAVE

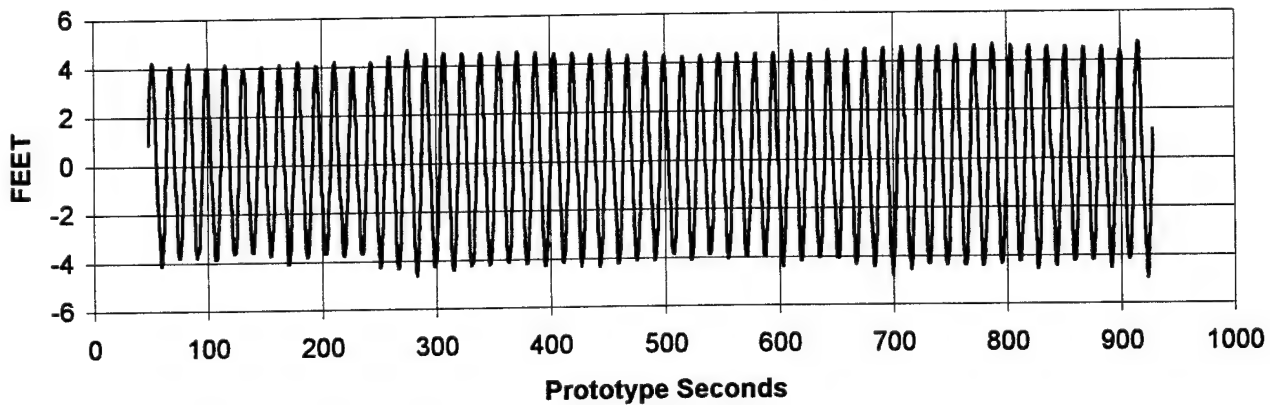
Unfiltered Time History



Filtered Low Frequency Time History

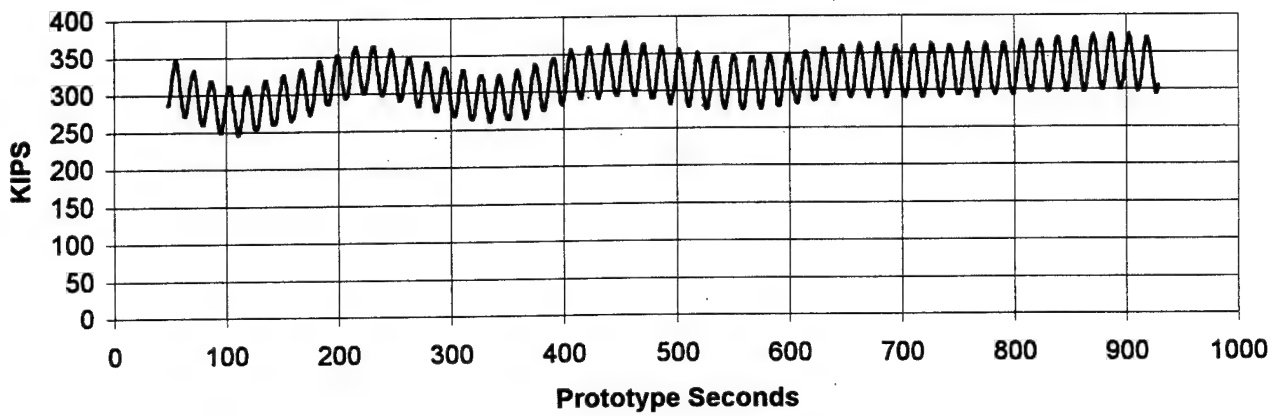


Filtered High Frequency Time History

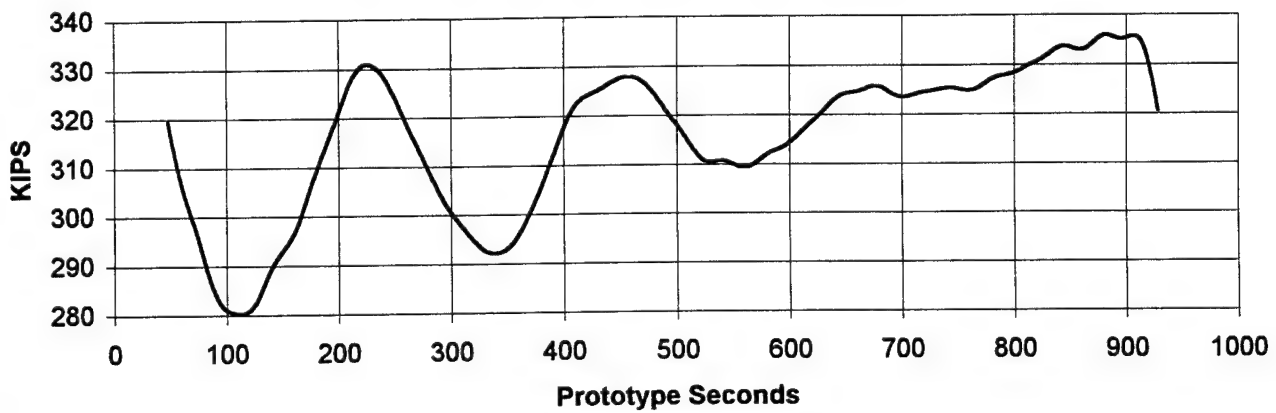


TEST A1006 - ML_1 TENSION

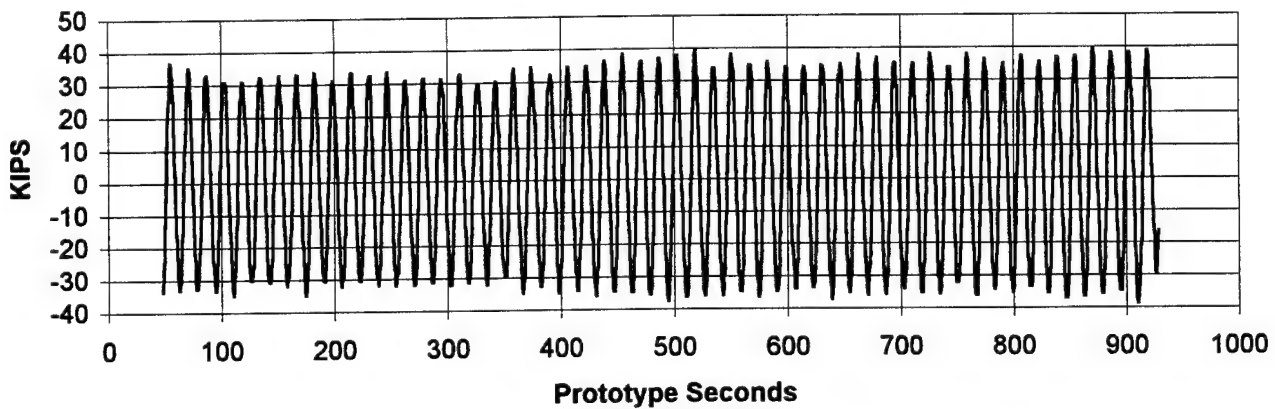
Unfiltered Time History



Filtered Low Frequency Time History

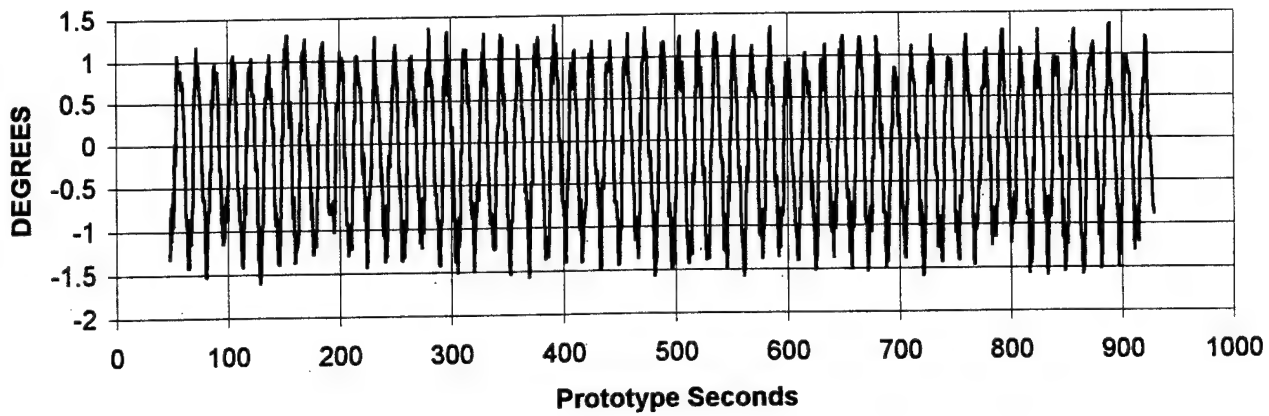


Filtered High Frequency Time History

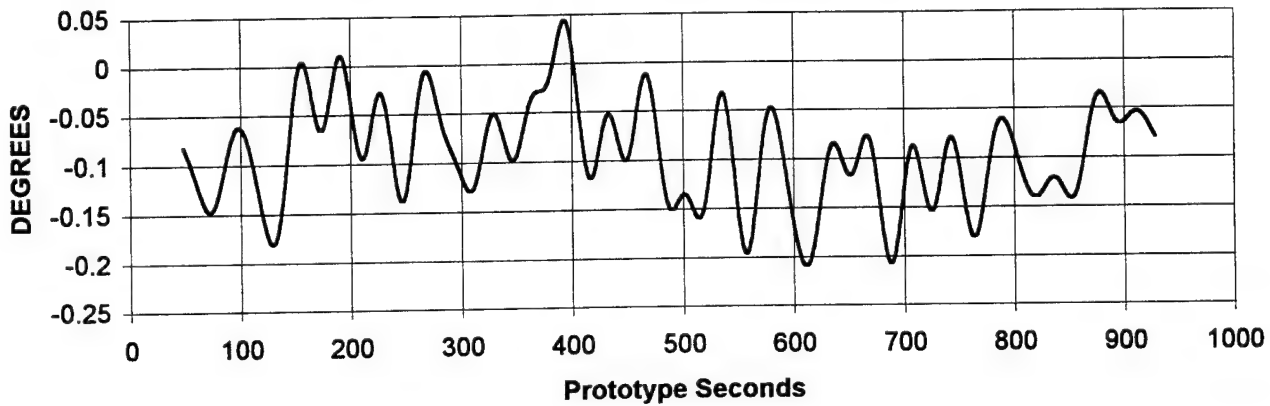


TEST A1006 - PITCH

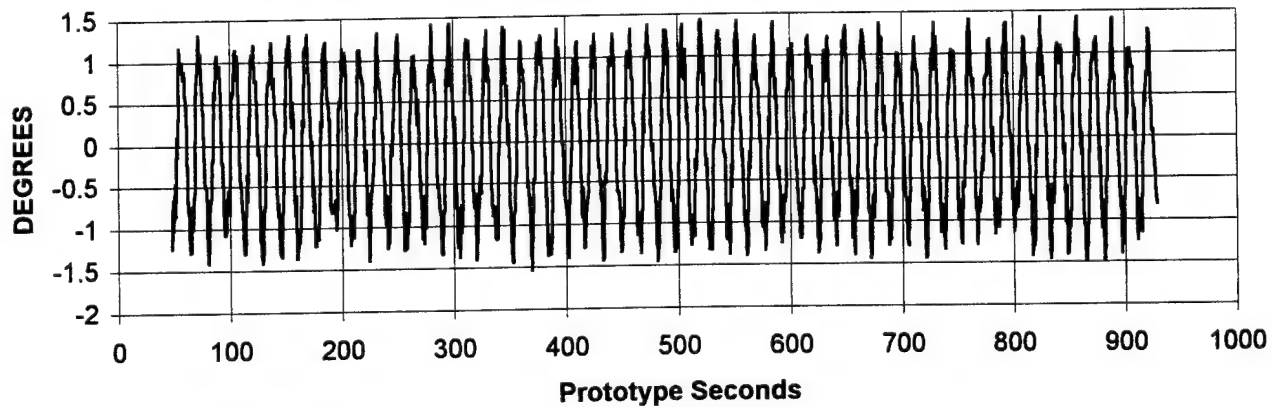
Unfiltered Time History



Filtered Low Frequency Time History

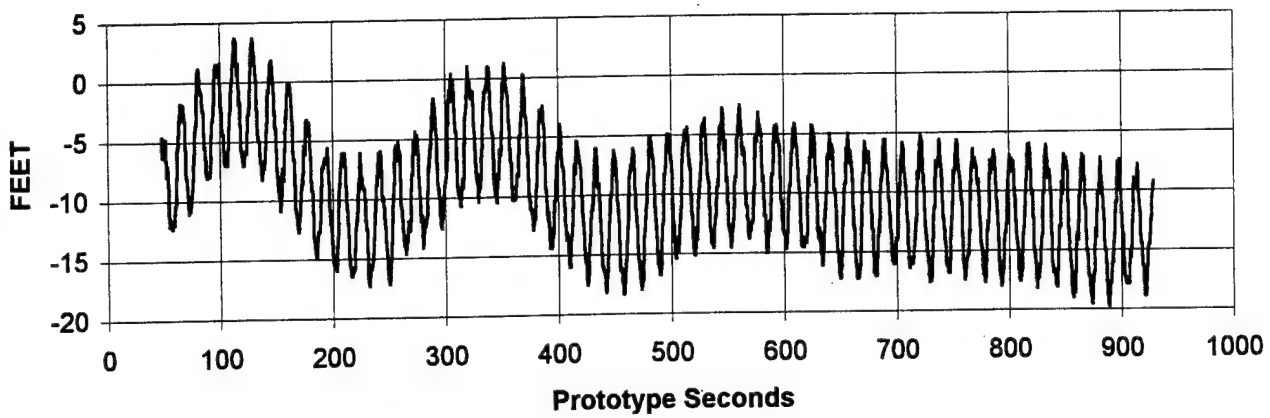


Filtered High Frequency Time History

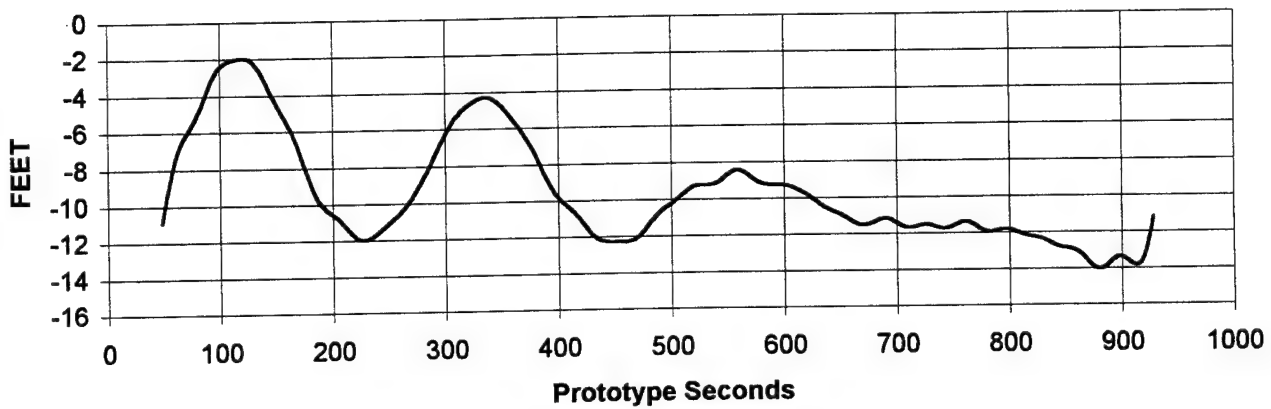


TEST A1006 - PT SURGE

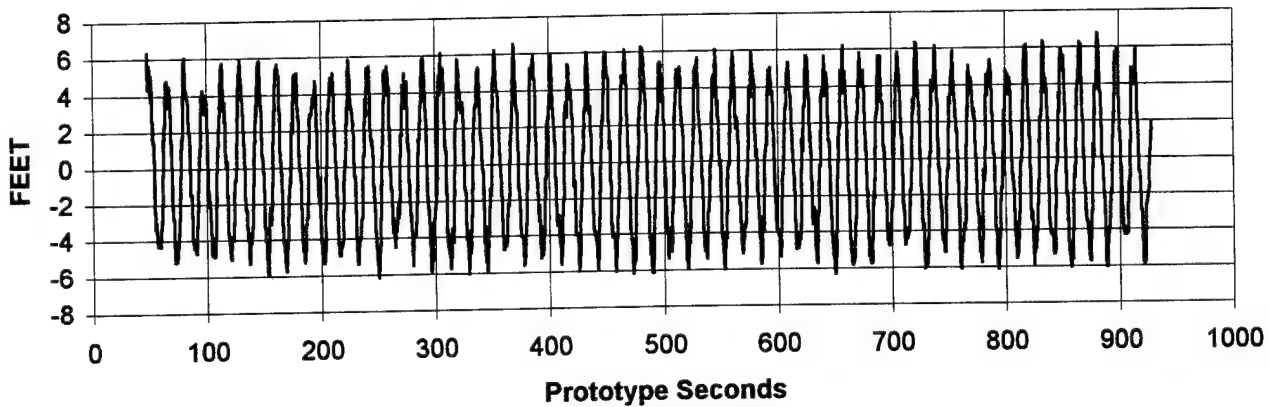
Unfiltered Time History



Filtered Low Frequency Time History

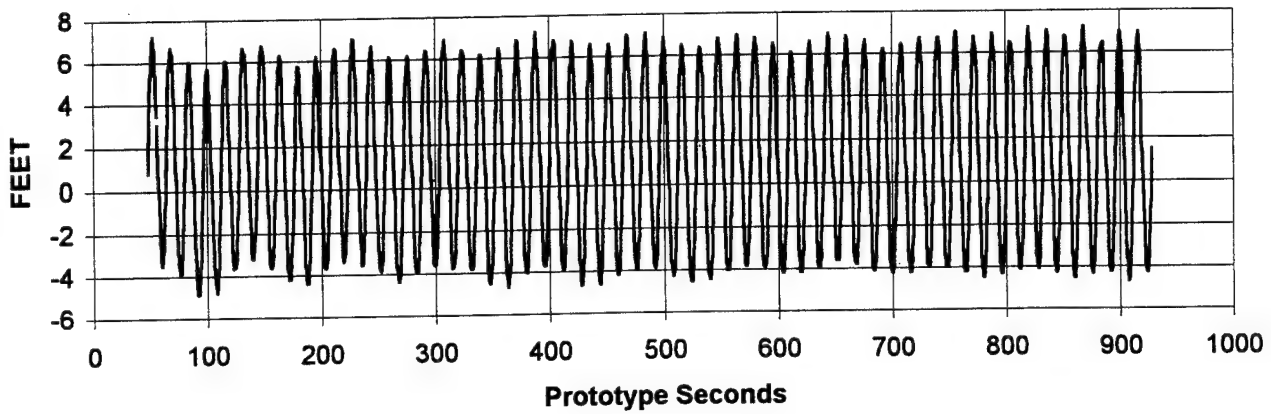


Filtered High Frequency Time History

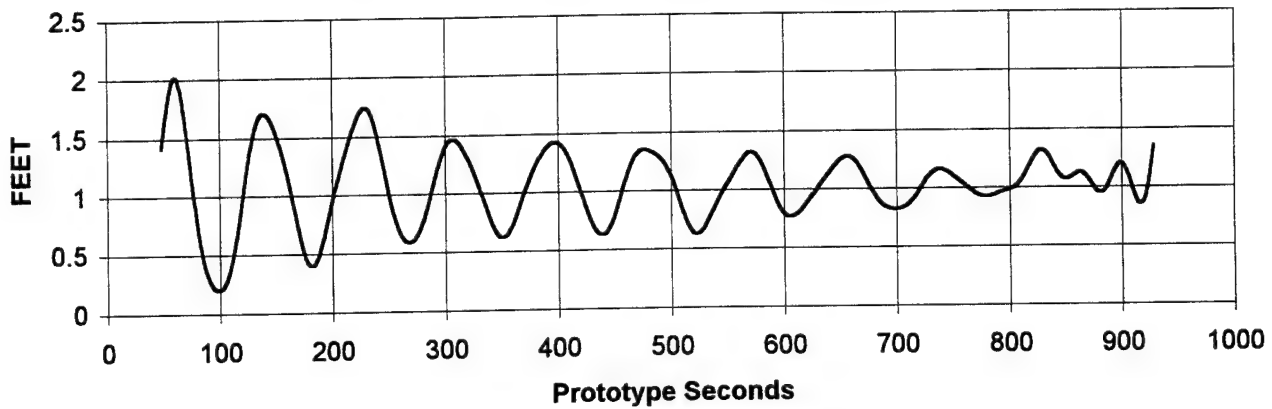


TEST A1006 - PT HEAVE

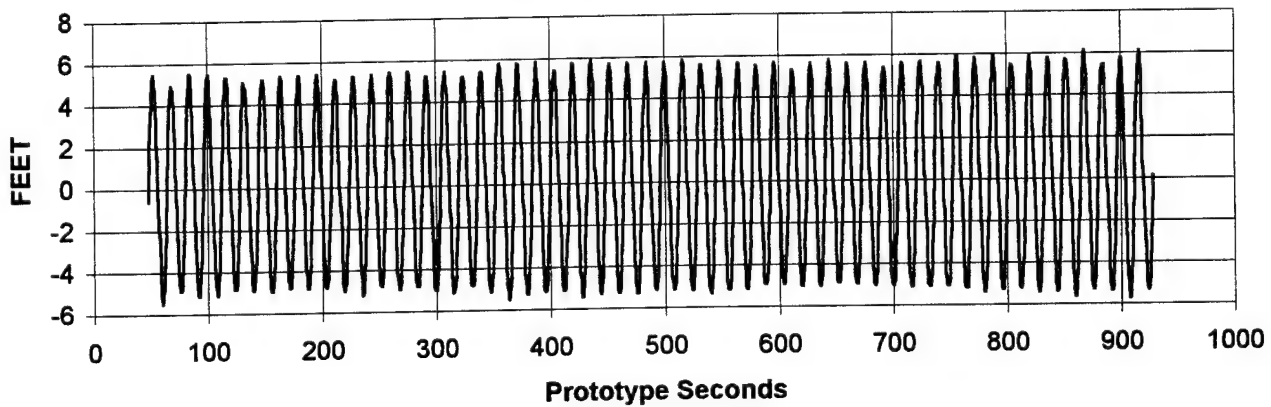
Unfiltered Time History



Filtered Low Frequency Time History

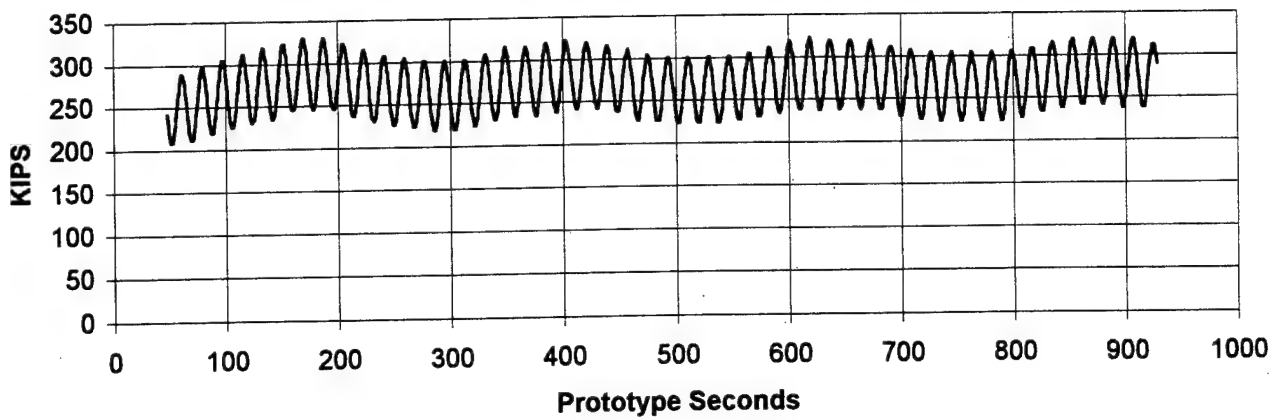


Filtered High Frequency Time History

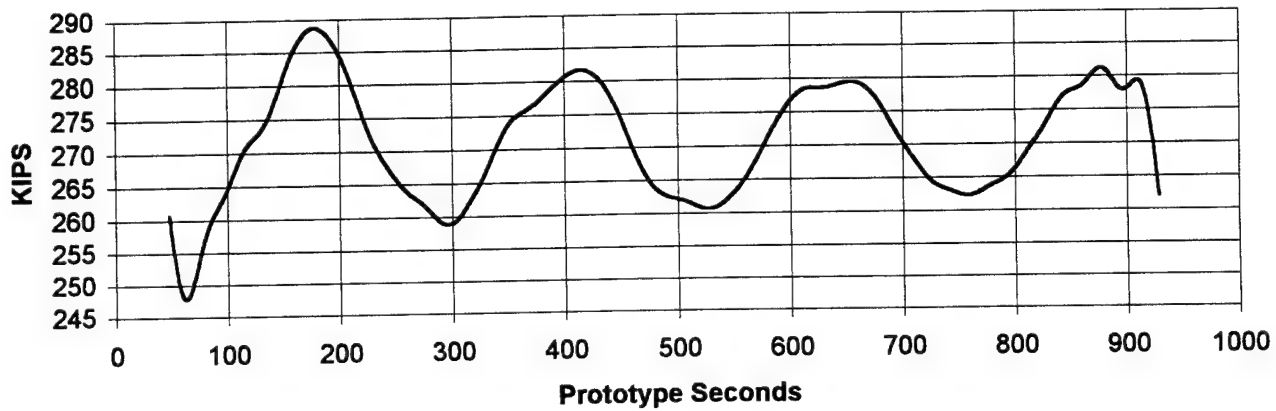


TEST A1007 - ML_1 TENSION

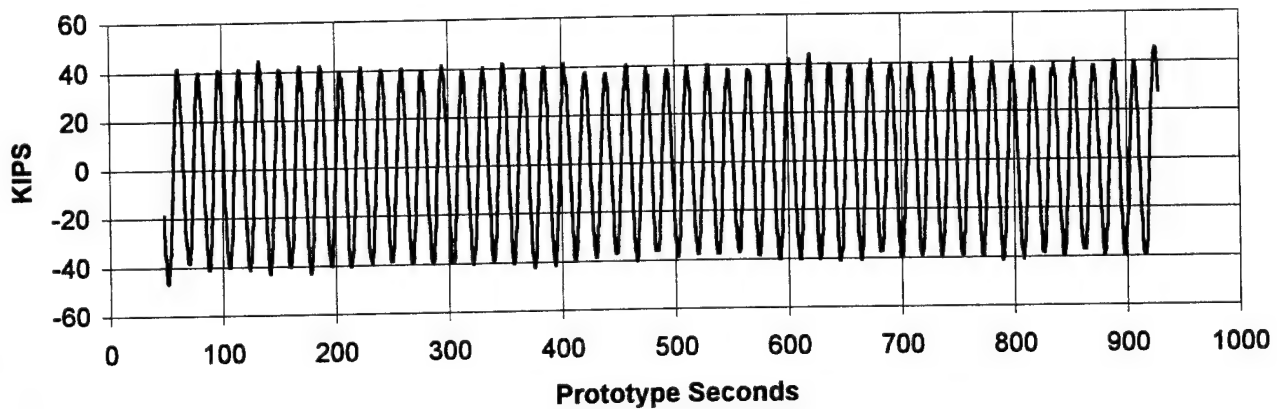
Unfiltered Time History



Filtered Low Frequency Time History

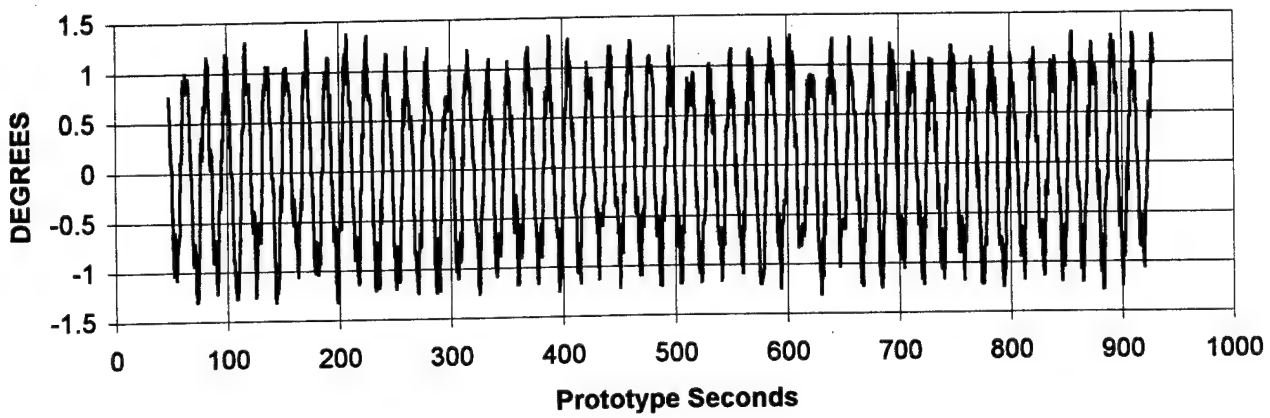


Filtered High Frequency Time History

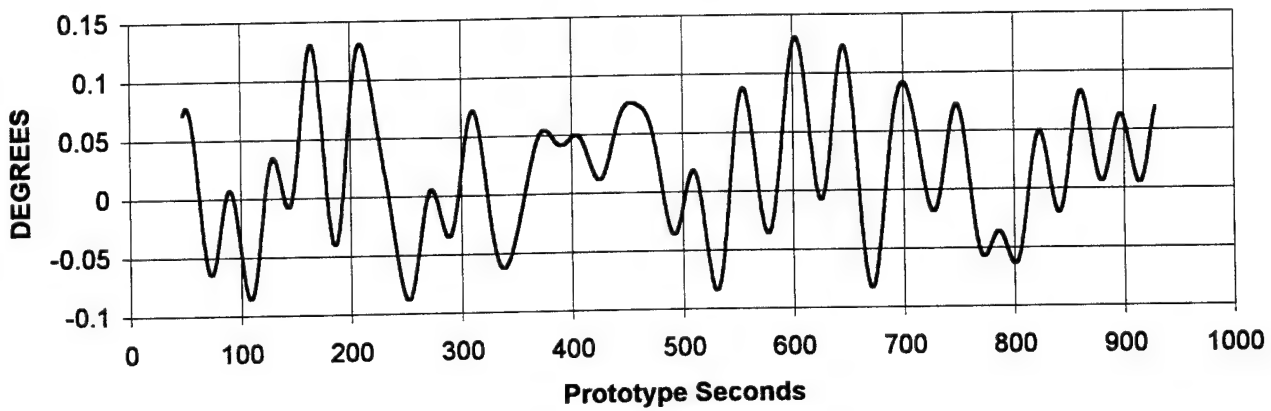


TEST A1007 - PITCH

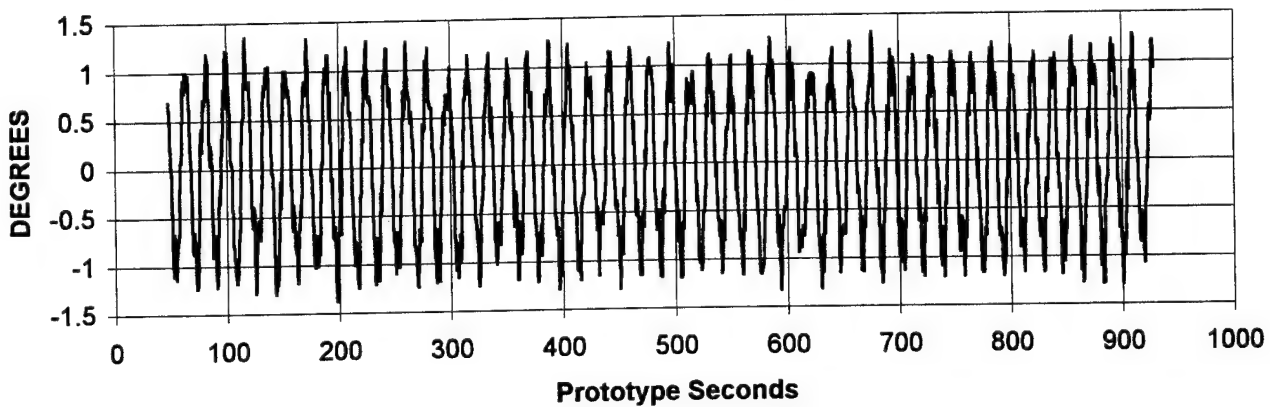
Unfiltered Time History



Filtered Low Frequency Time History

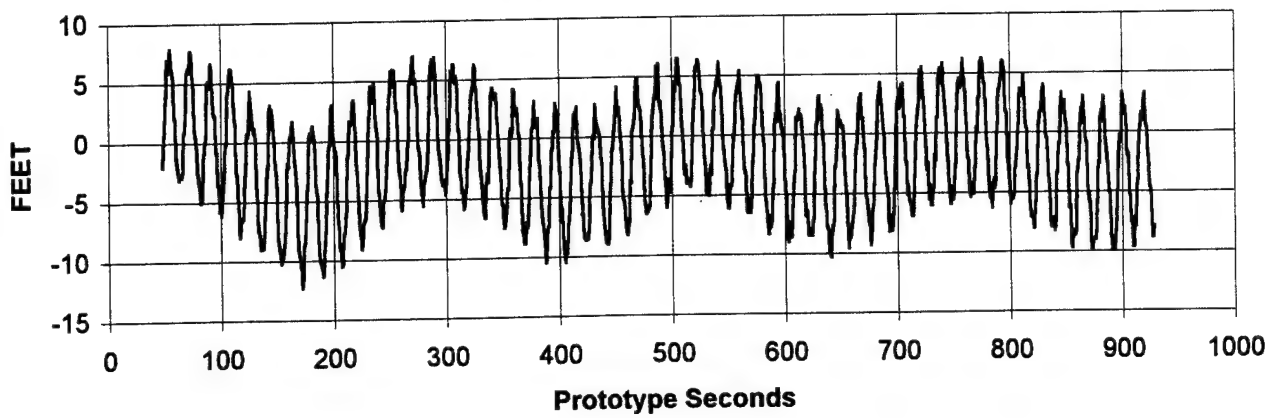


Filtered High Frequency Time History

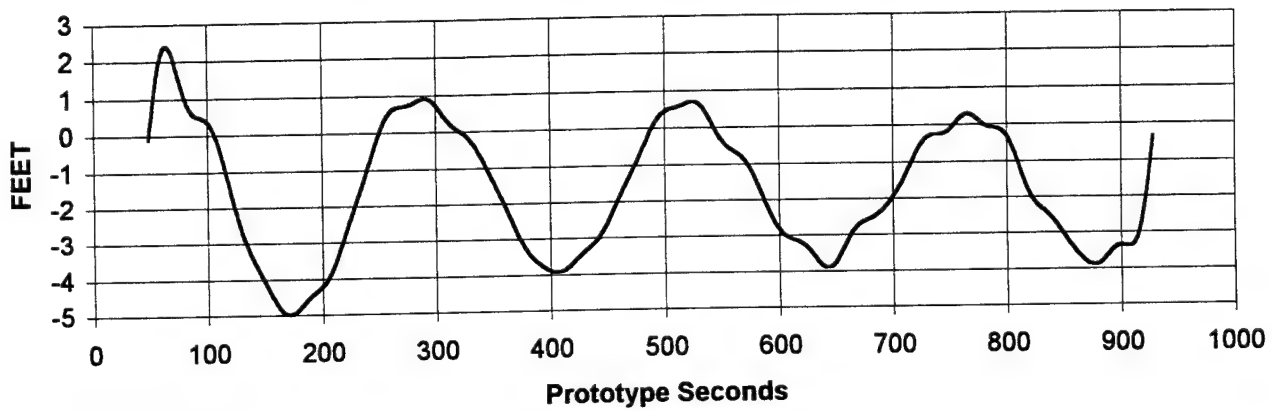


TEST A1007 - PT SURGE

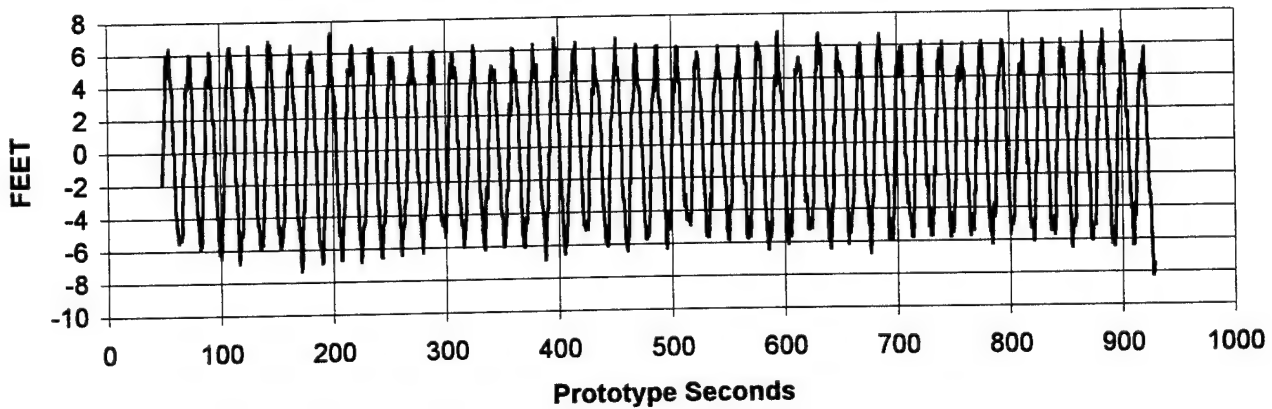
Unfiltered Time History



Filtered Low Frequency Time History

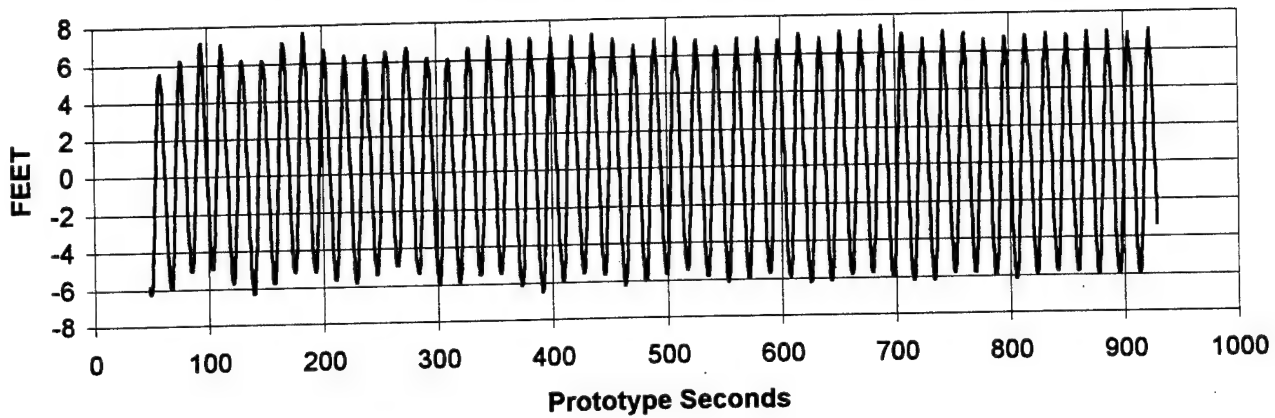


Filtered High Frequency Time History

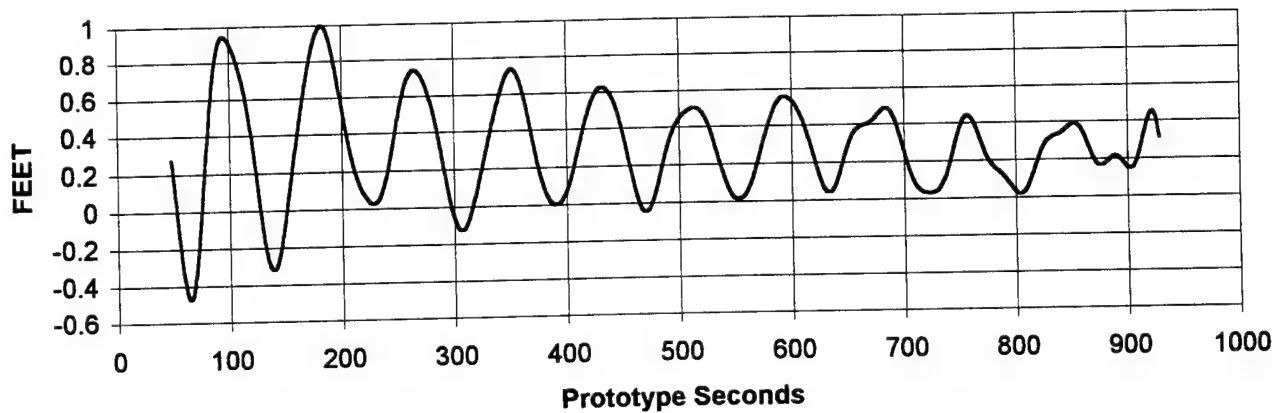


TEST A1007 - PT HEAVE

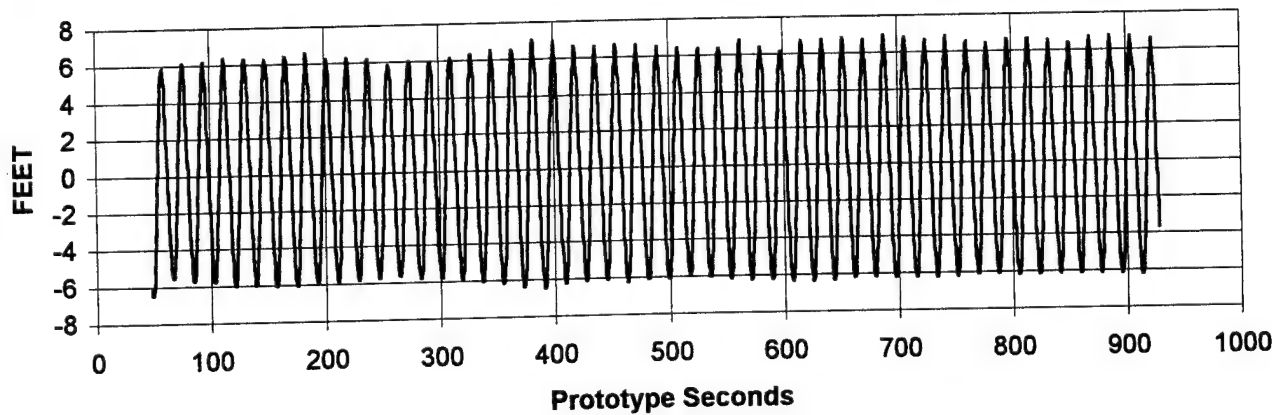
Unfiltered Time History



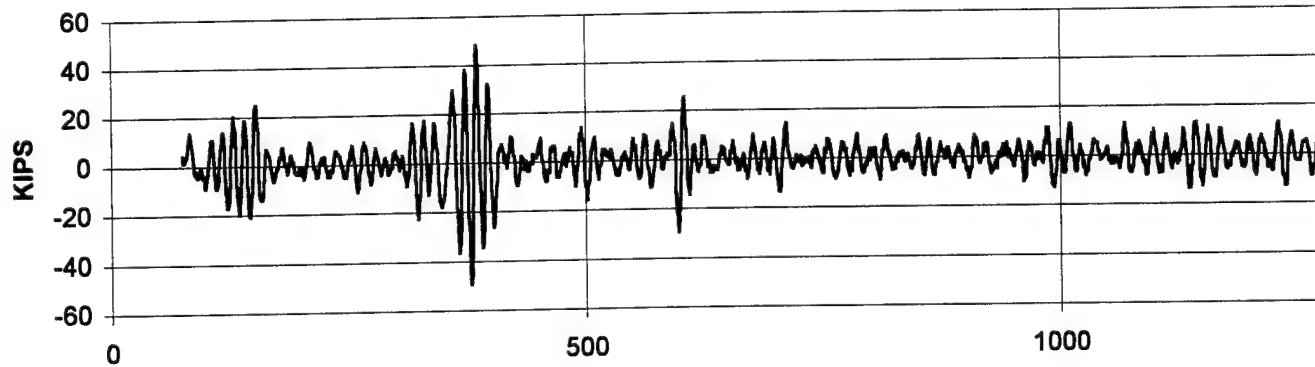
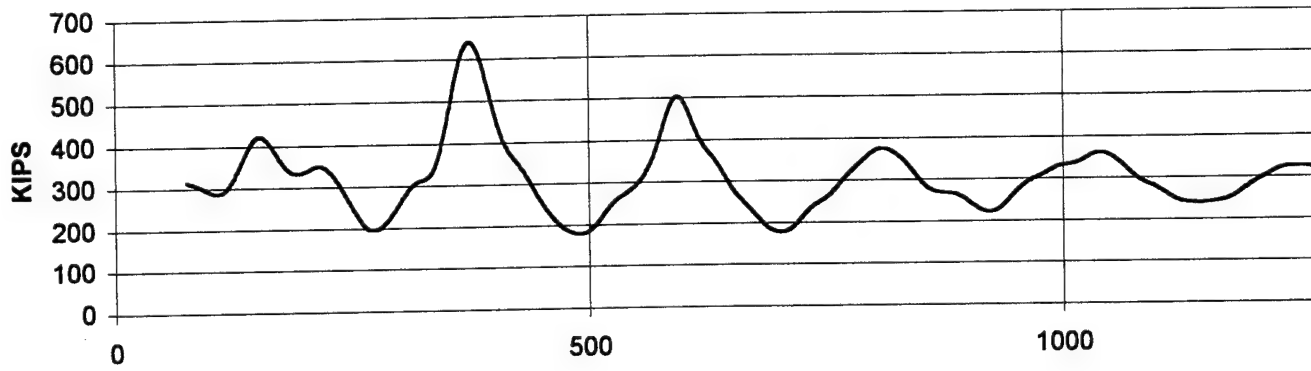
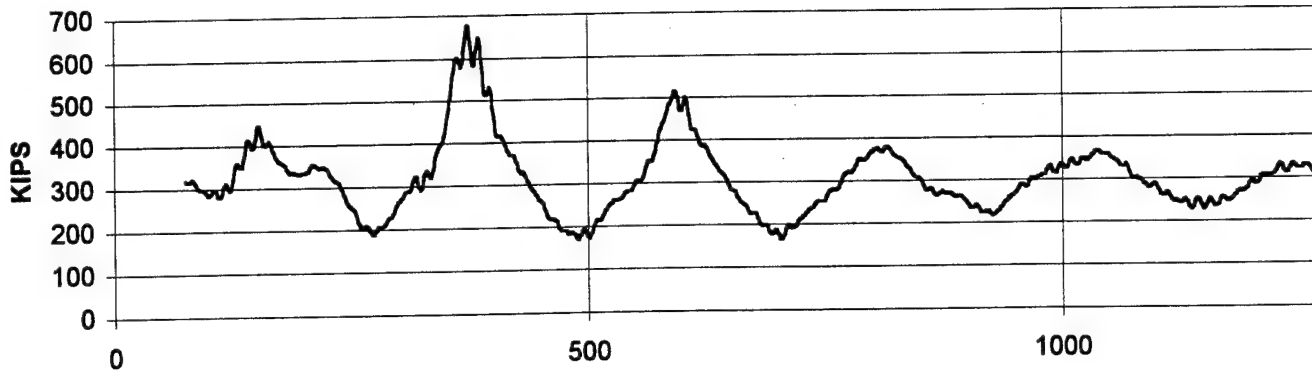
Filtered Low Frequency Time History



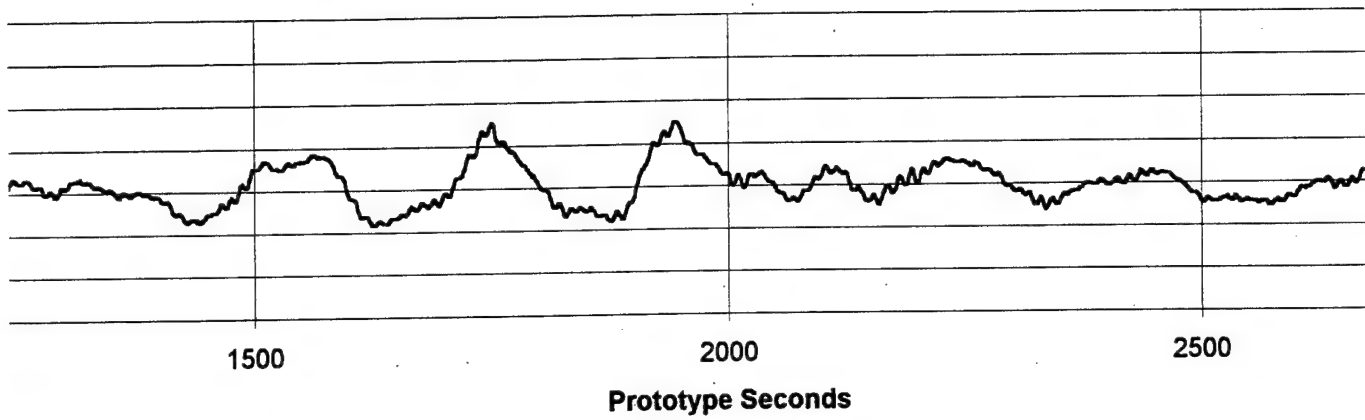
Filtered High Frequency Time History



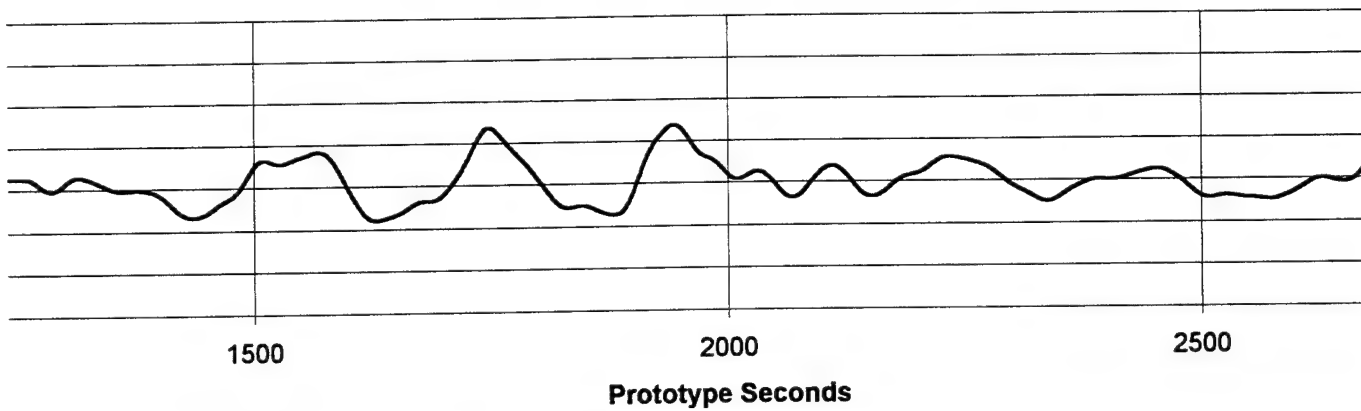
TEST A1008 - ML_1 TENSION



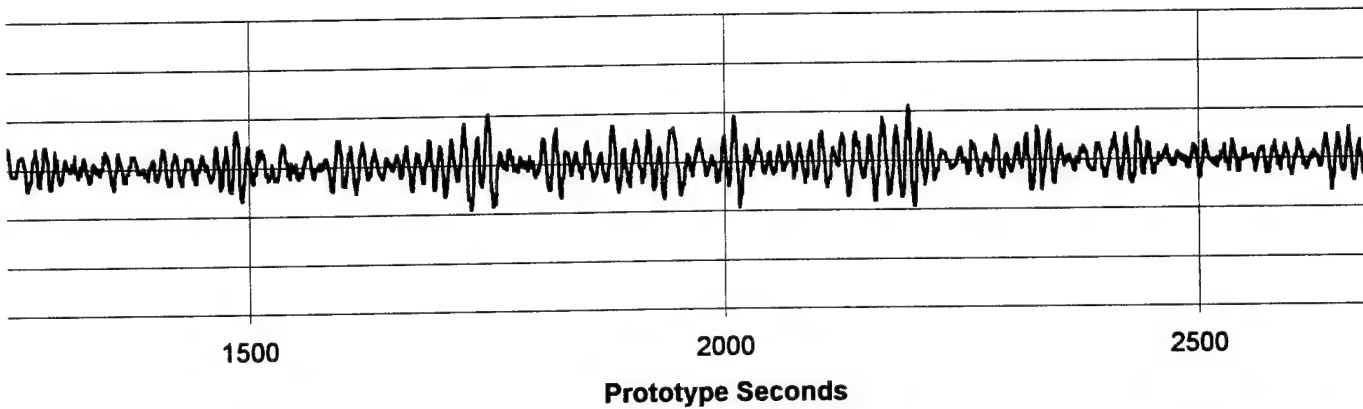
Unfiltered Time History



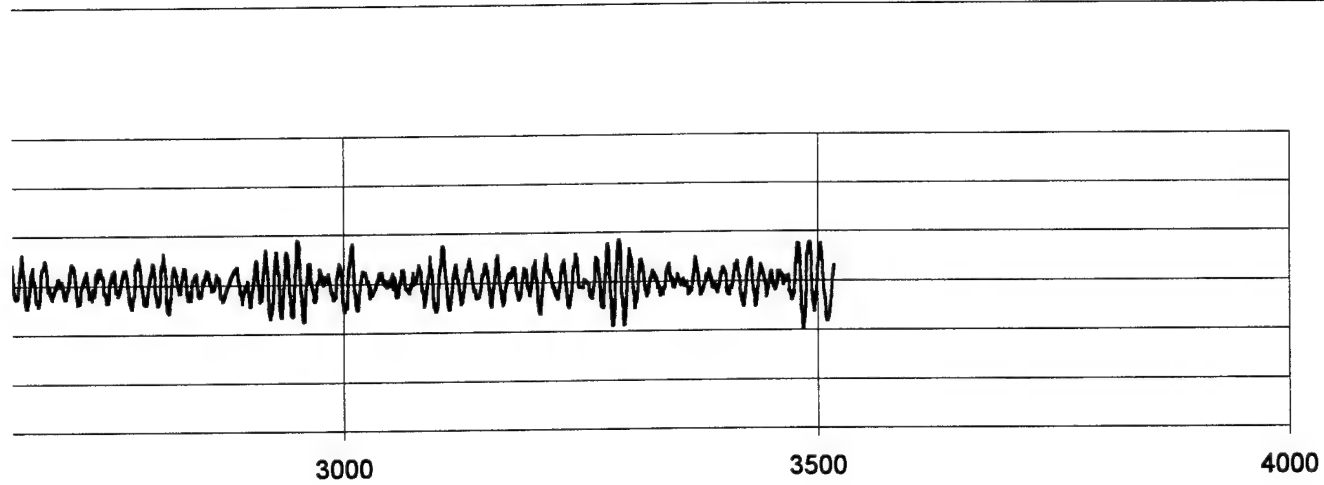
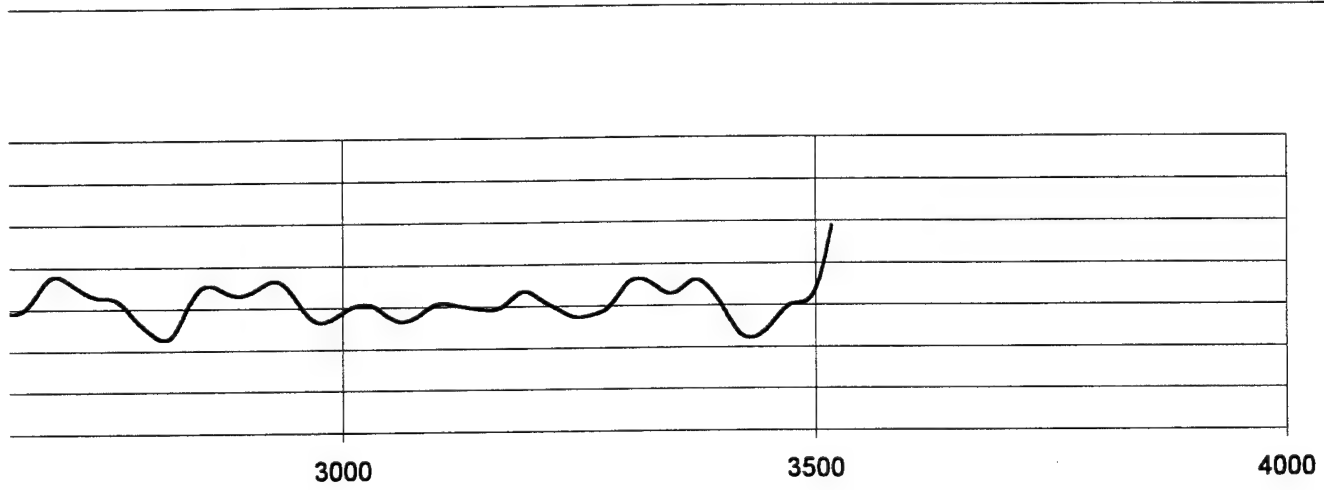
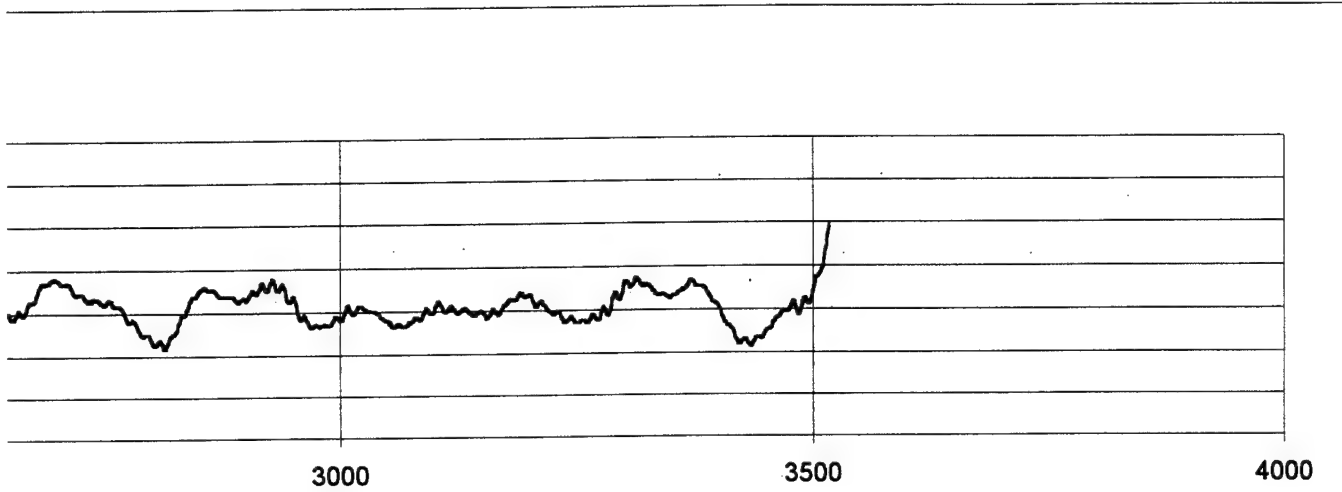
Filtered Low Frequency Time History



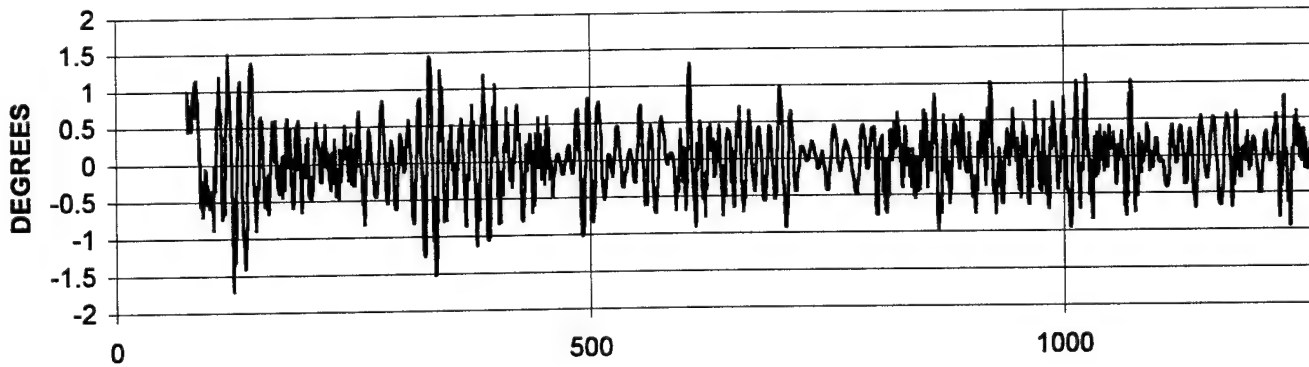
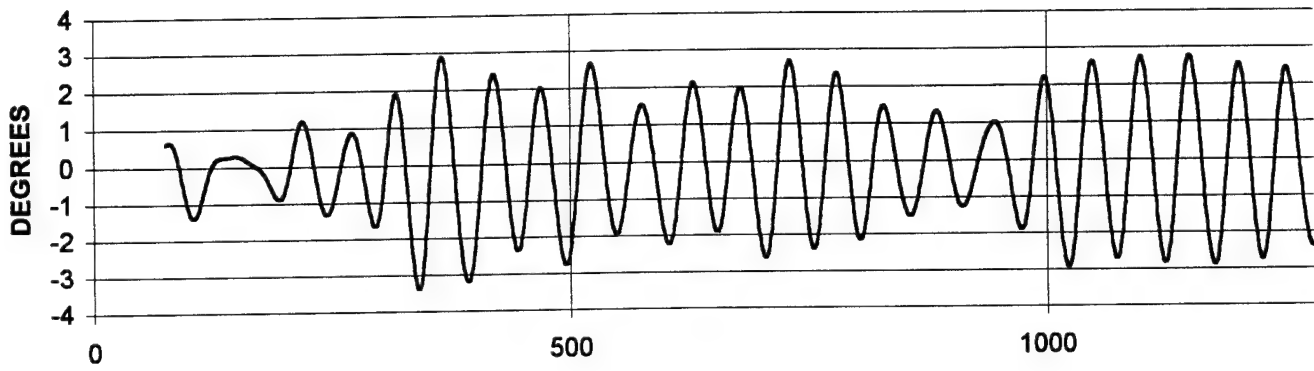
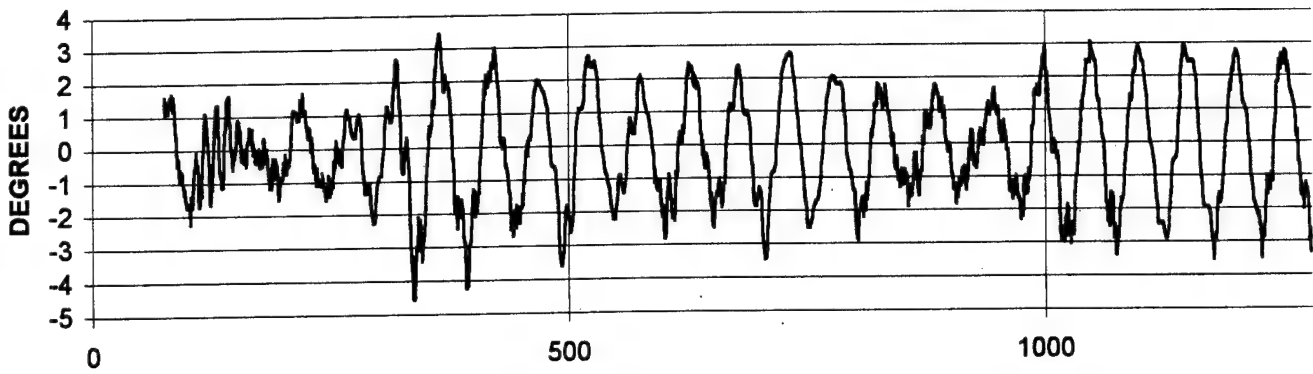
Filtered High Frequency Time History



TEST A1008 - ML_1 TENSION

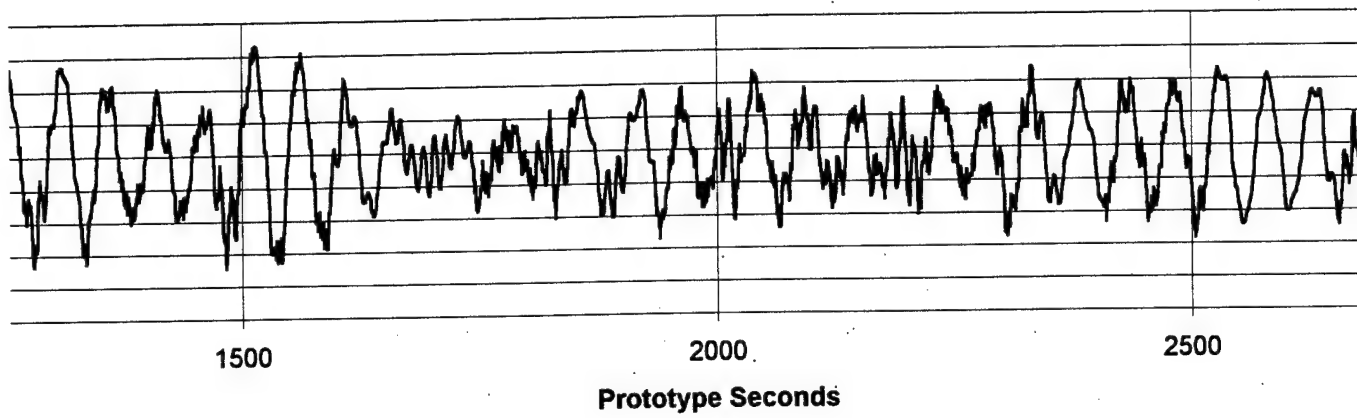


TEST A1008 - PITCH

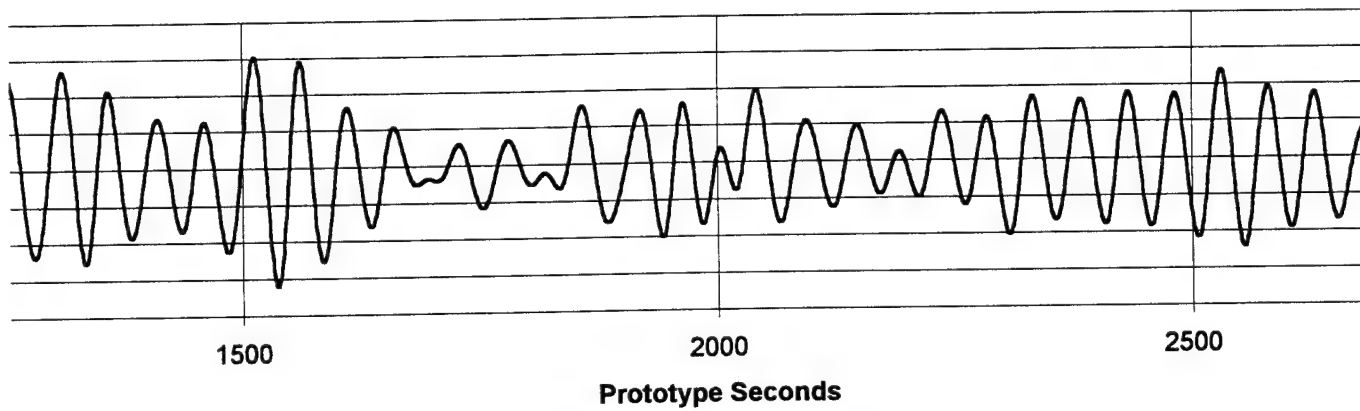


TEST A1008 - PITCH

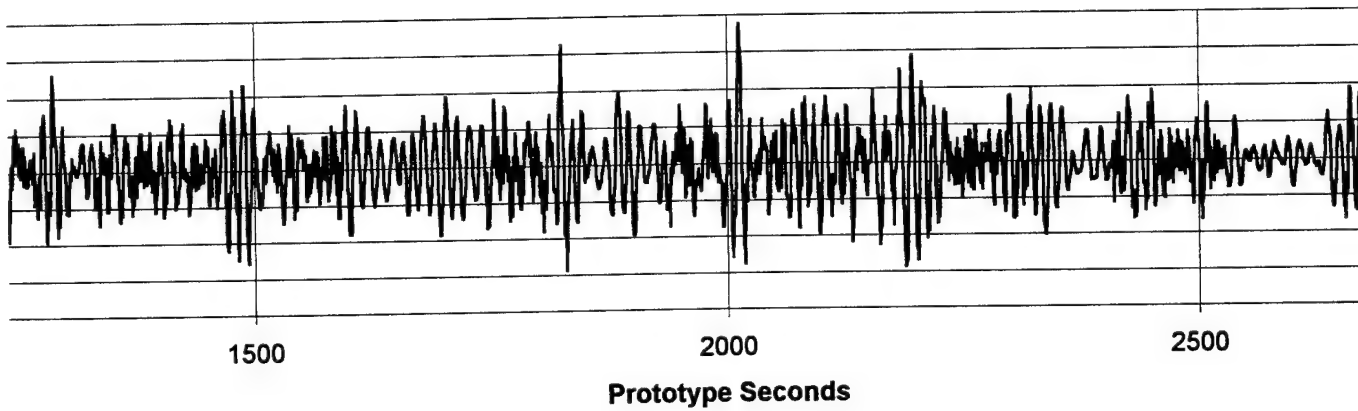
Unfiltered Time History



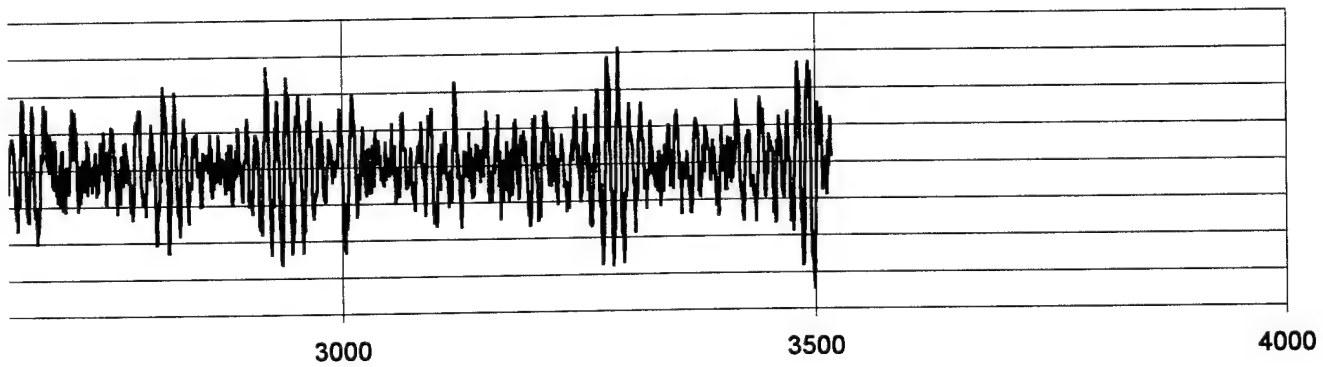
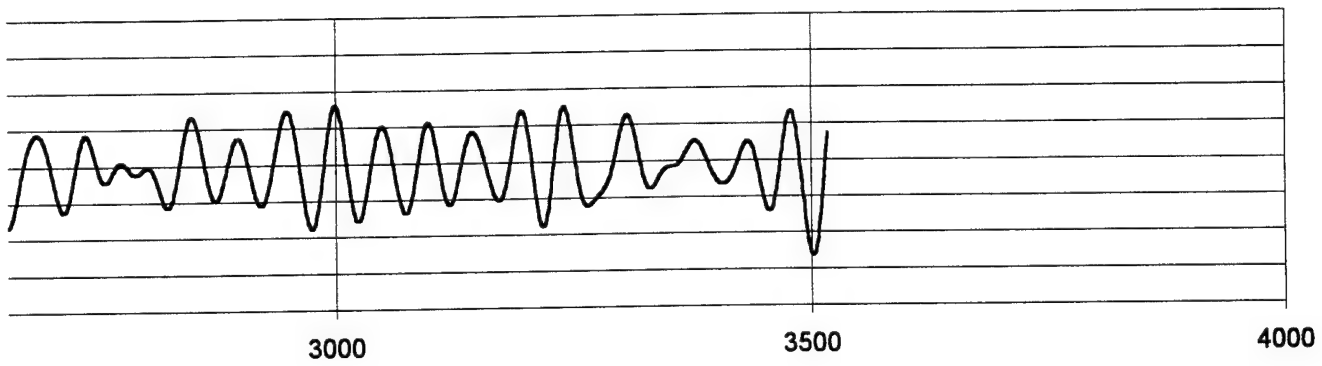
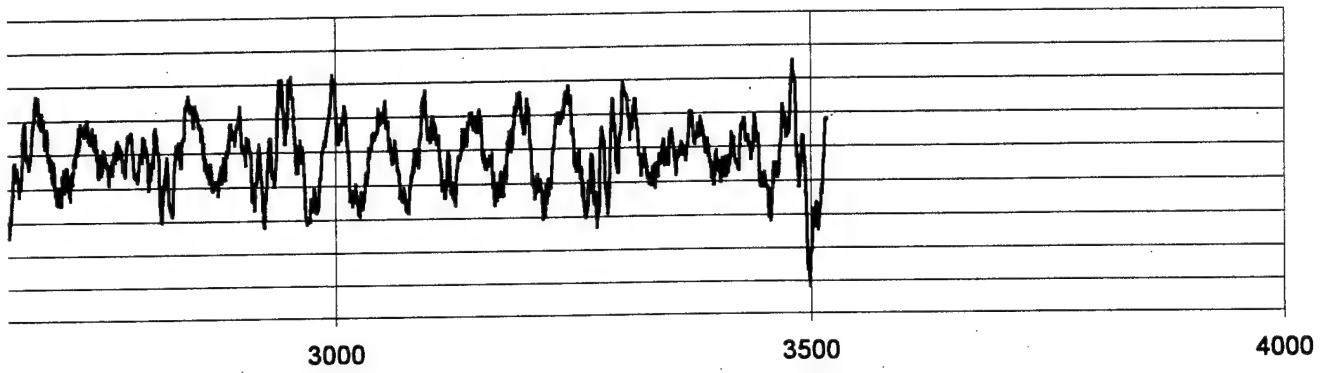
Filtered Low Frequency Time History



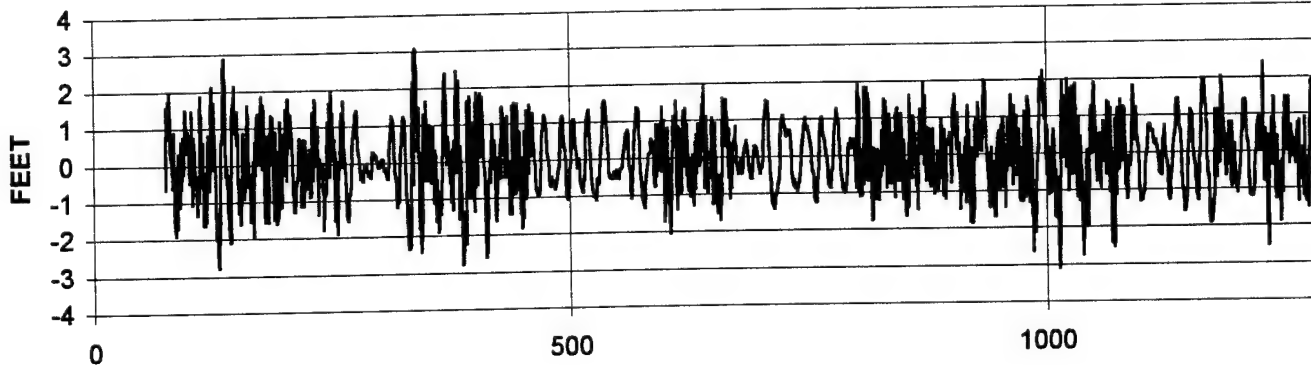
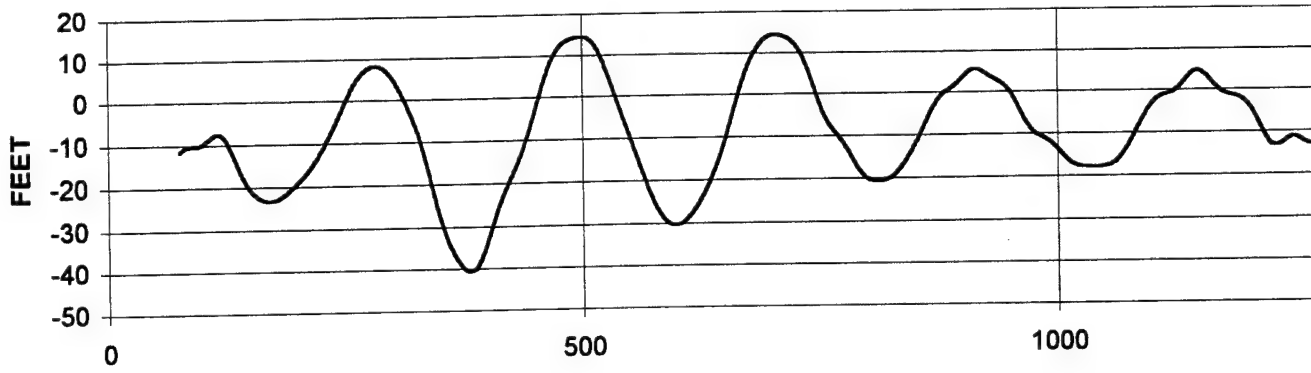
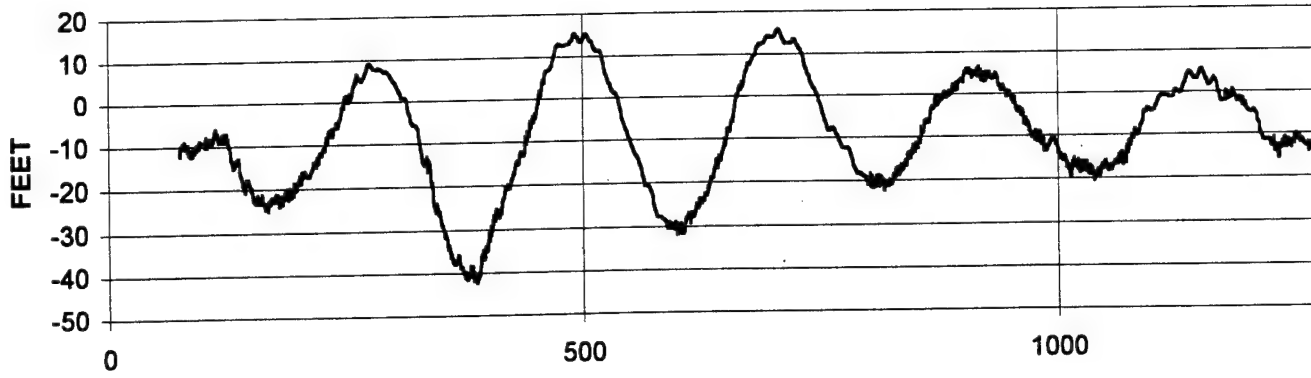
Filtered High Frequency Time History



TEST A1008 - PITCH

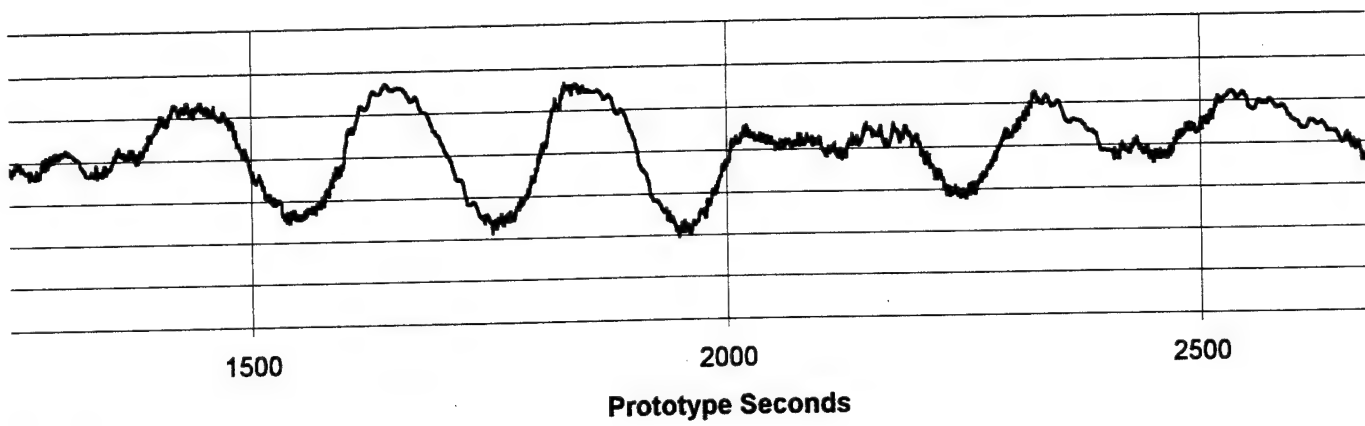


TEST A1008 - PT SURGE

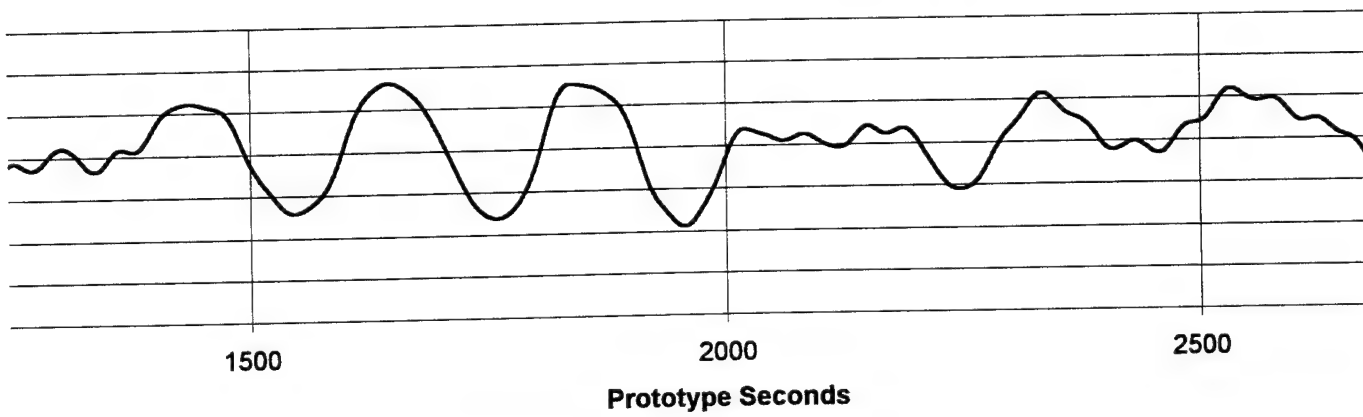


TEST A1008 - PT SURGE

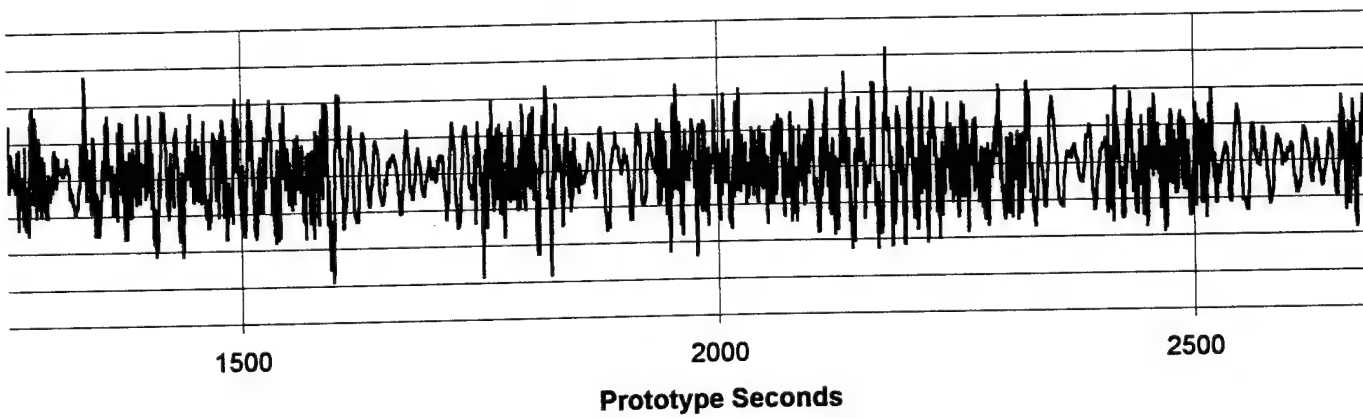
Unfiltered Time History



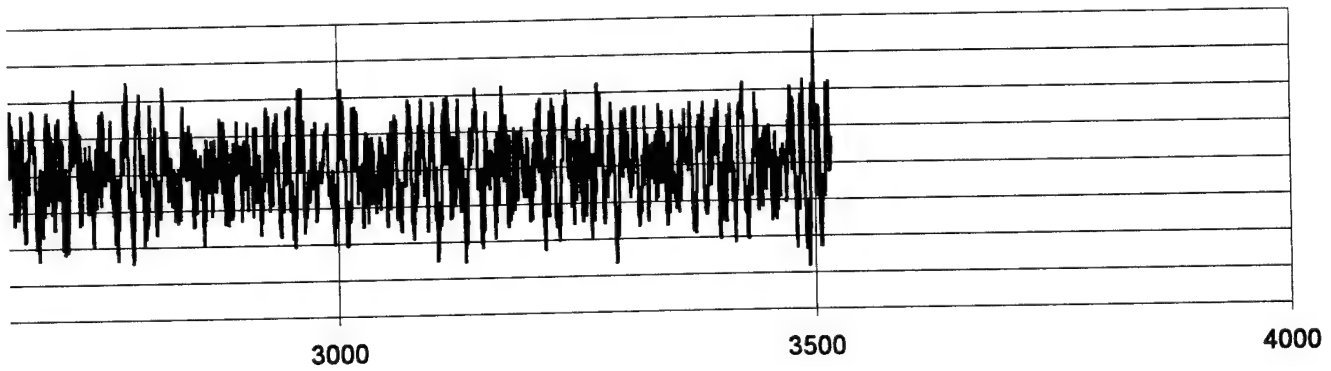
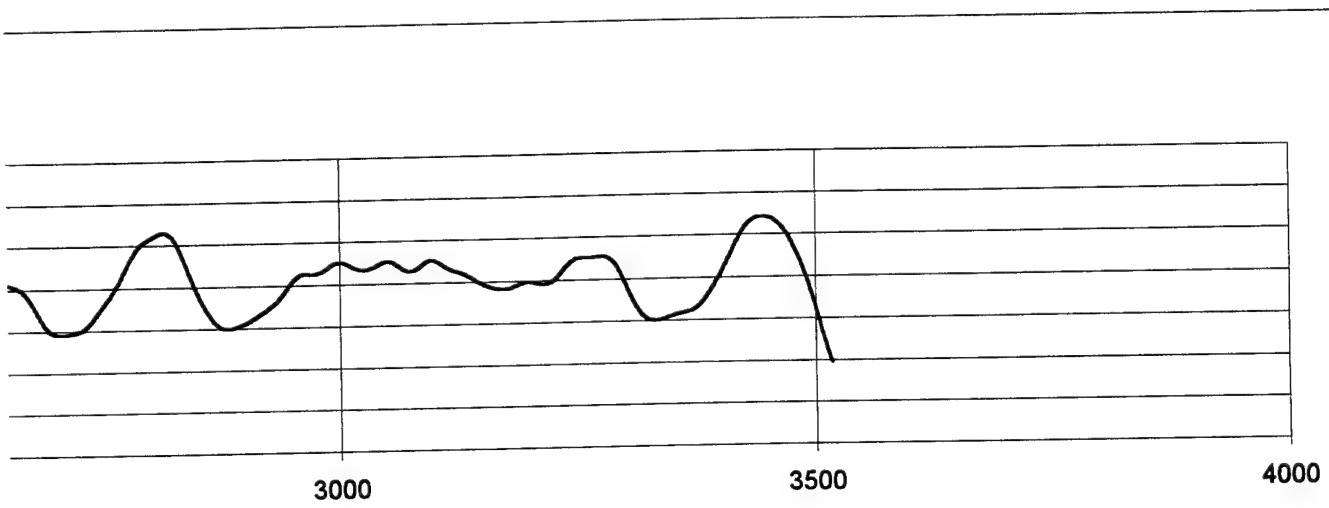
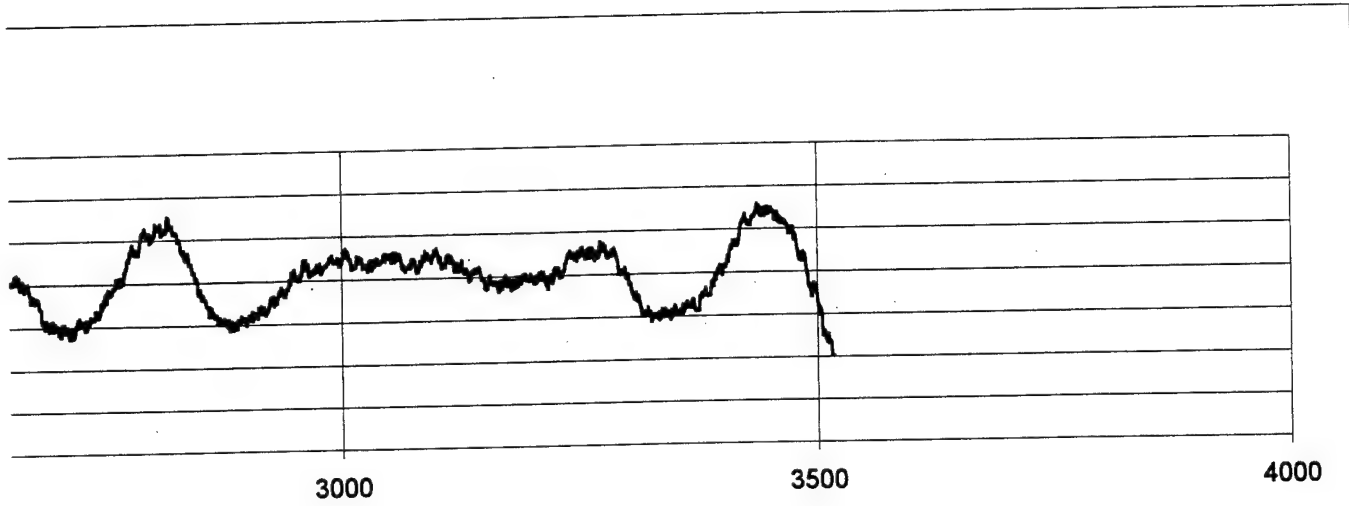
Filtered Low Frequency Time History



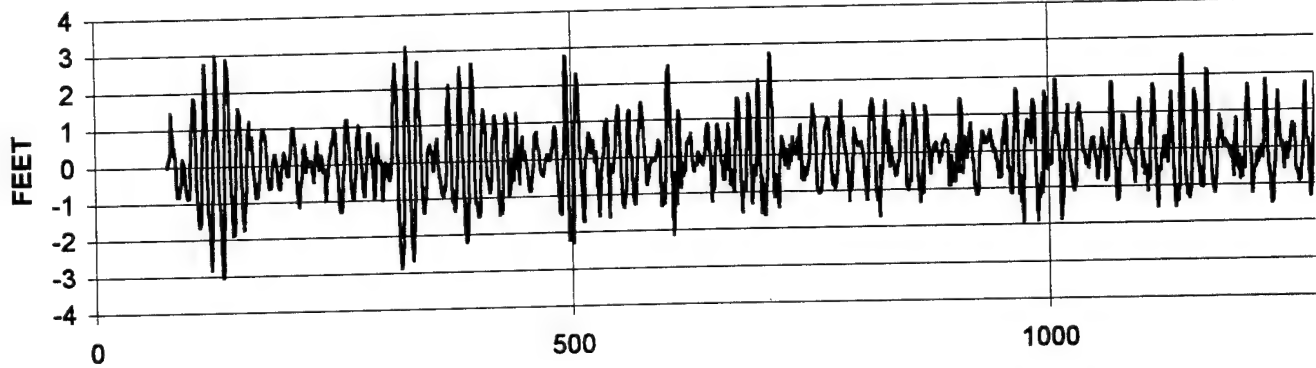
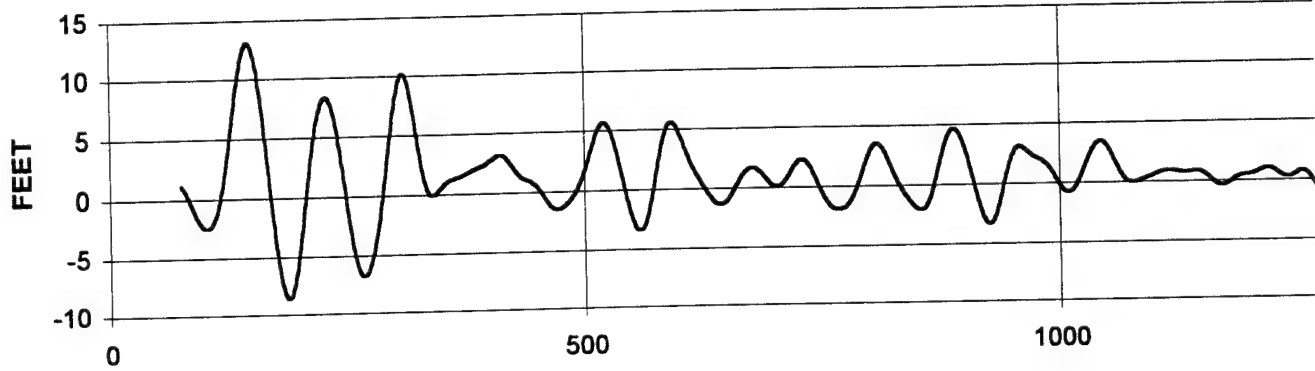
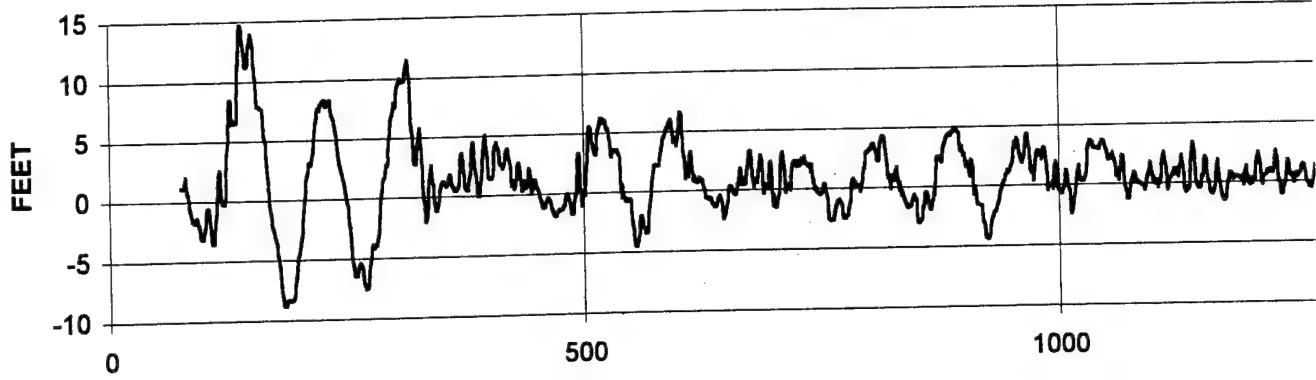
Filtered High Frequency Time History



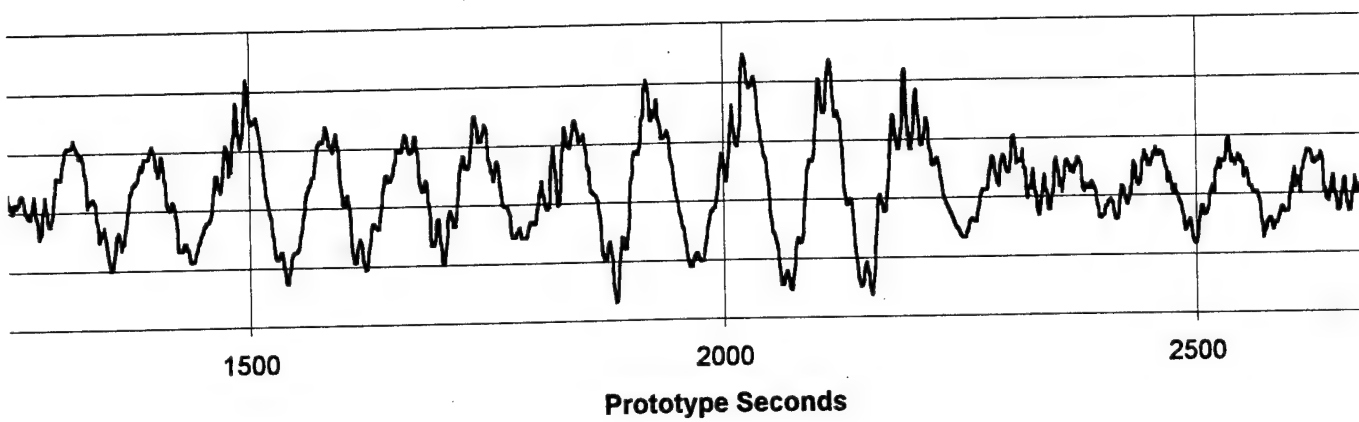
TEST A1008 - PT SURGE



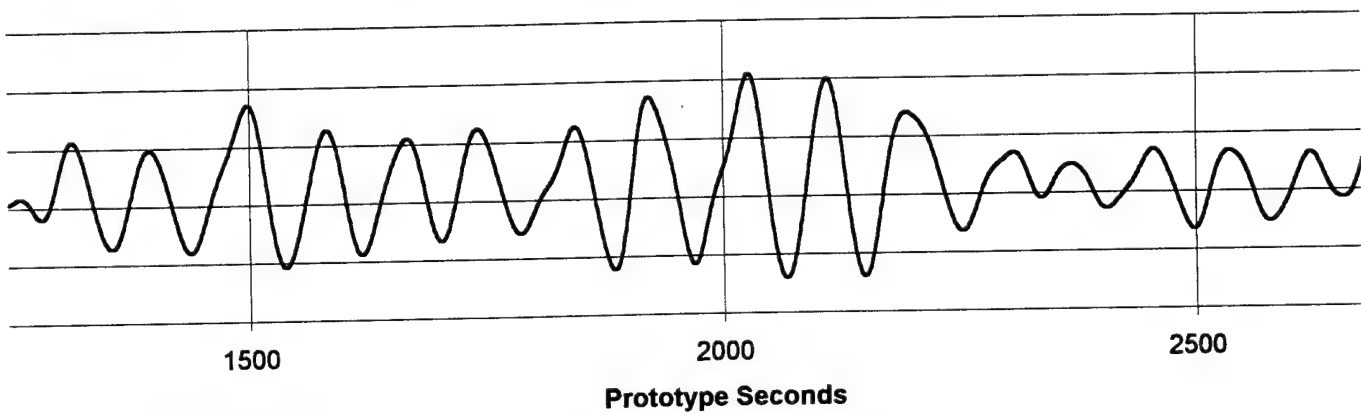
TEST A1008 - PT HEAVE



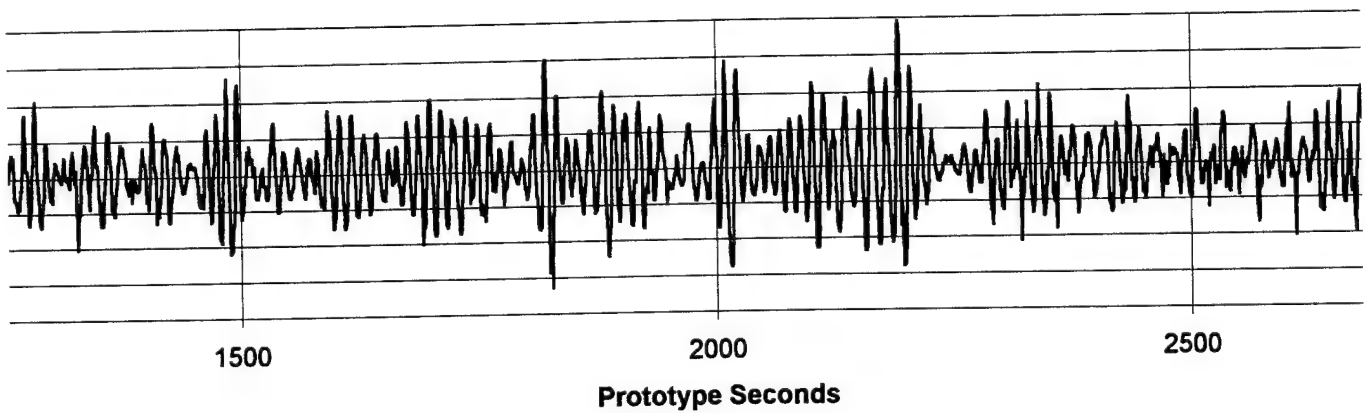
Unfiltered Time History



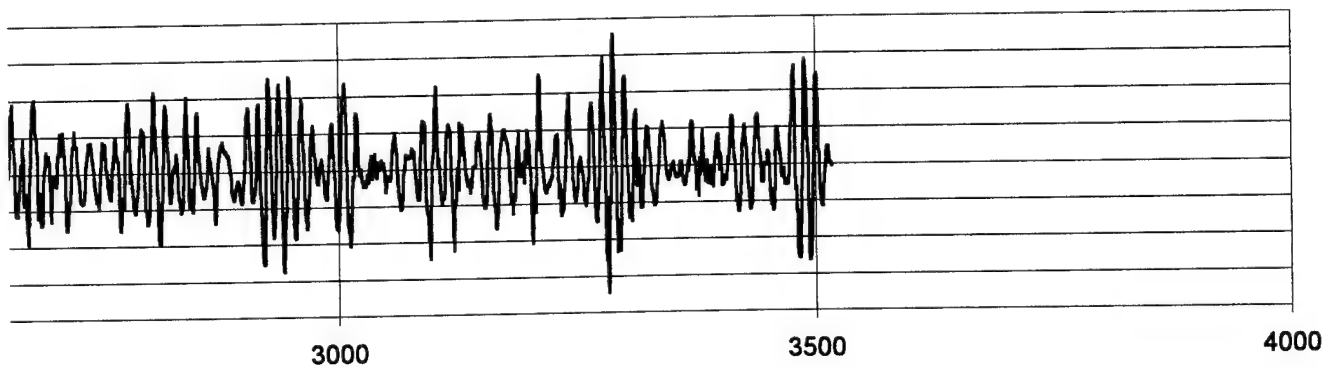
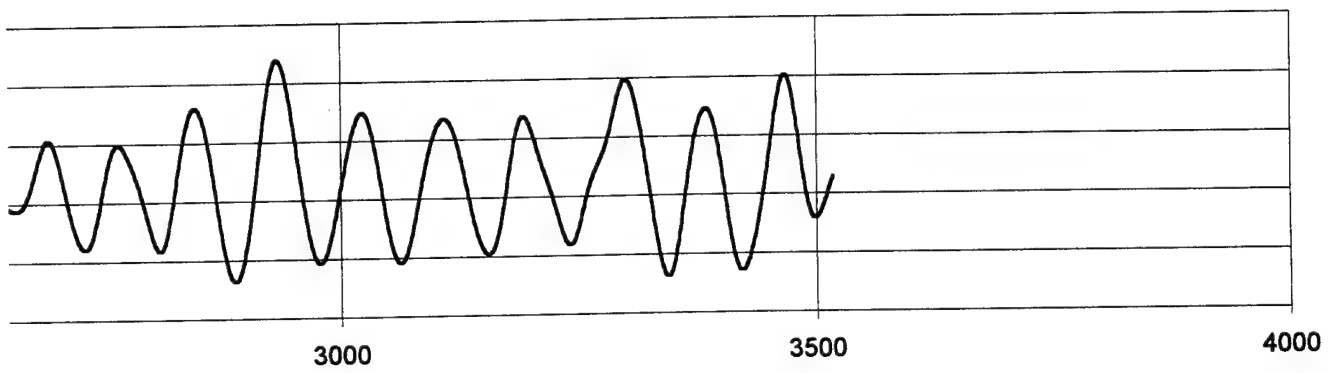
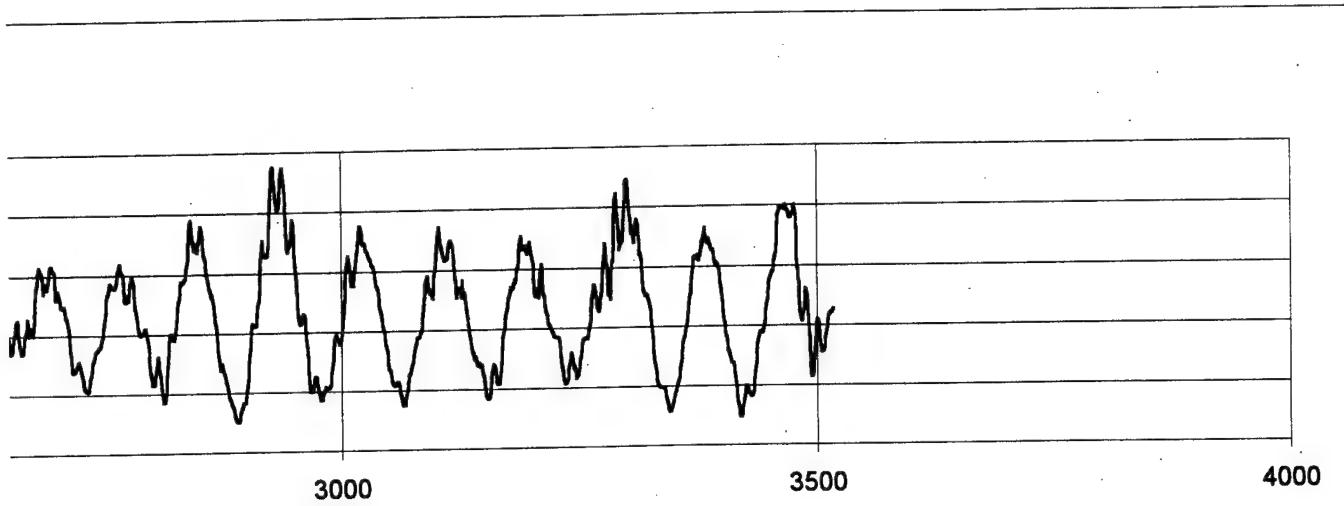
Filtered Low Frequency Time History



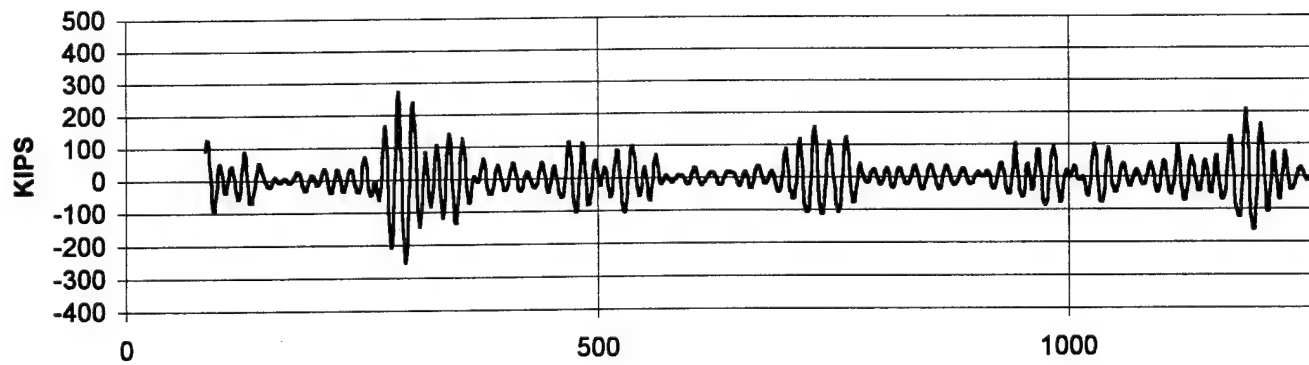
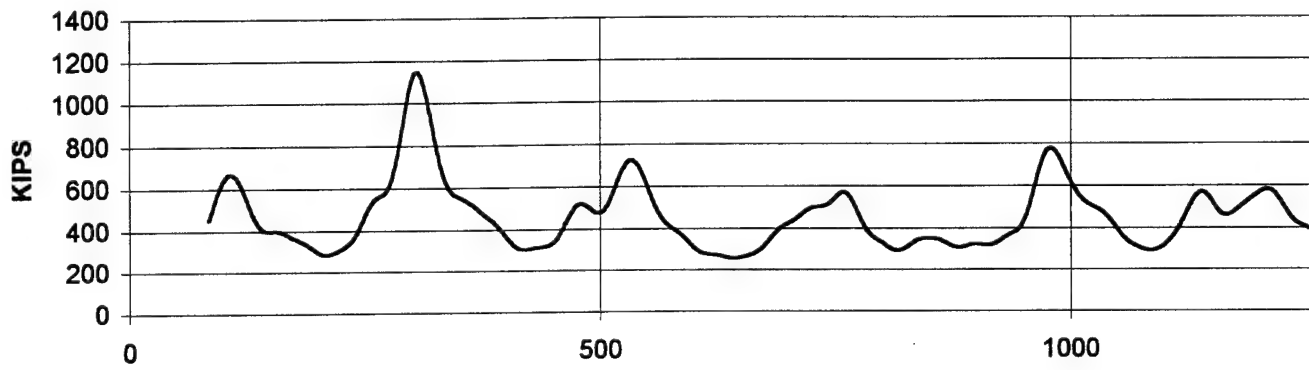
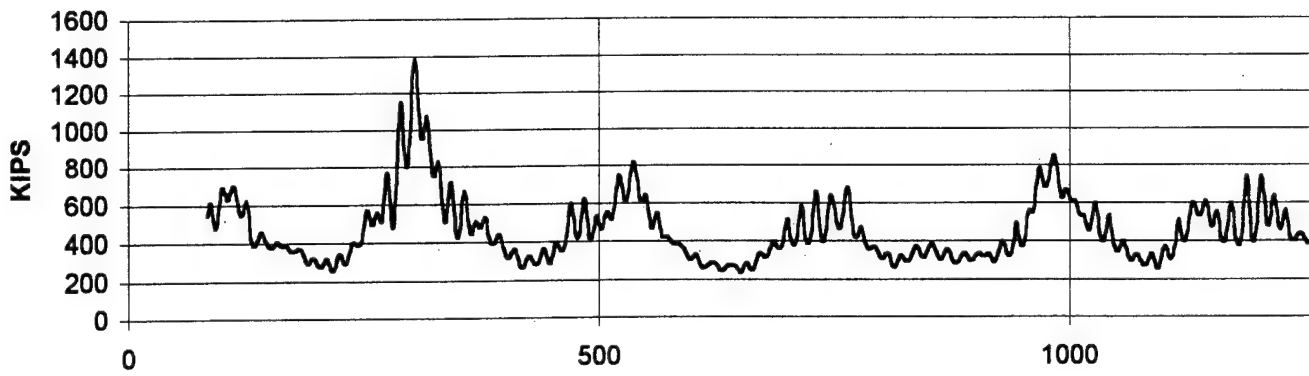
Filtered High Frequency Time History



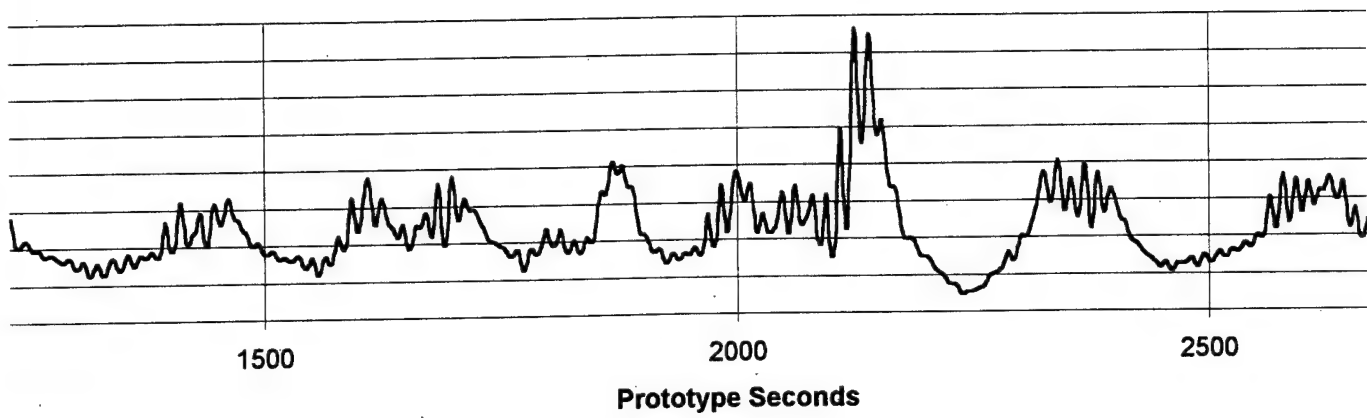
TEST A1008 - PT HEAVE



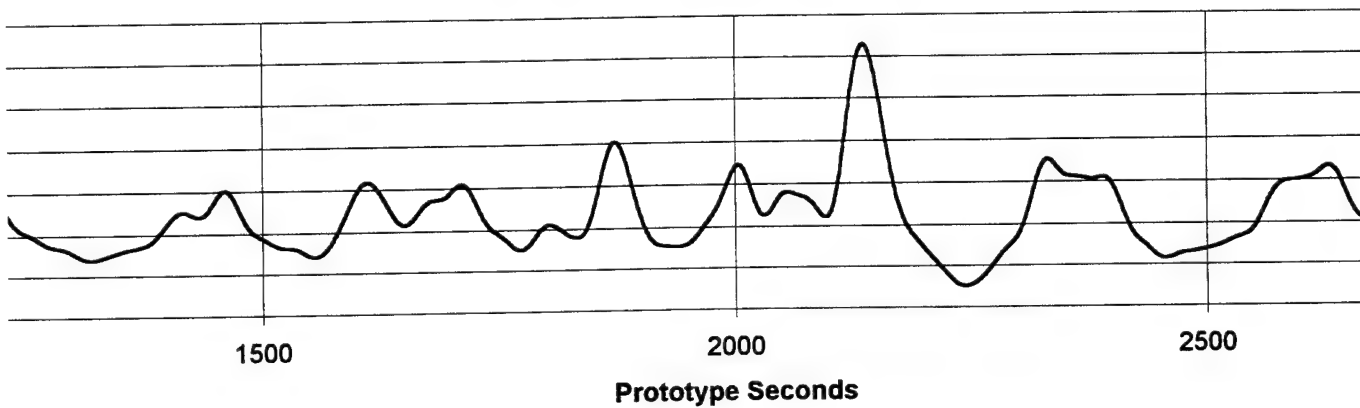
TEST A1009 - ML_1 TENSION



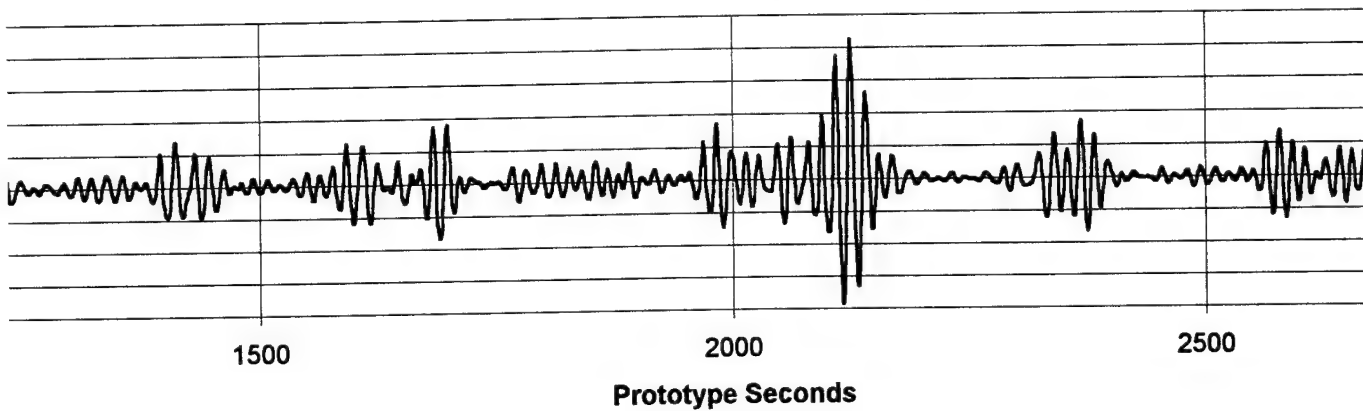
Unfiltered Time History



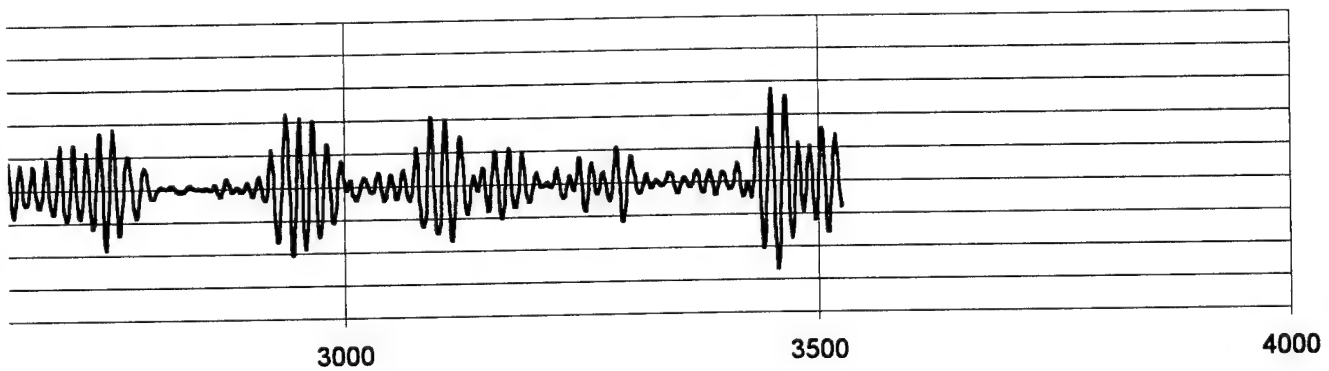
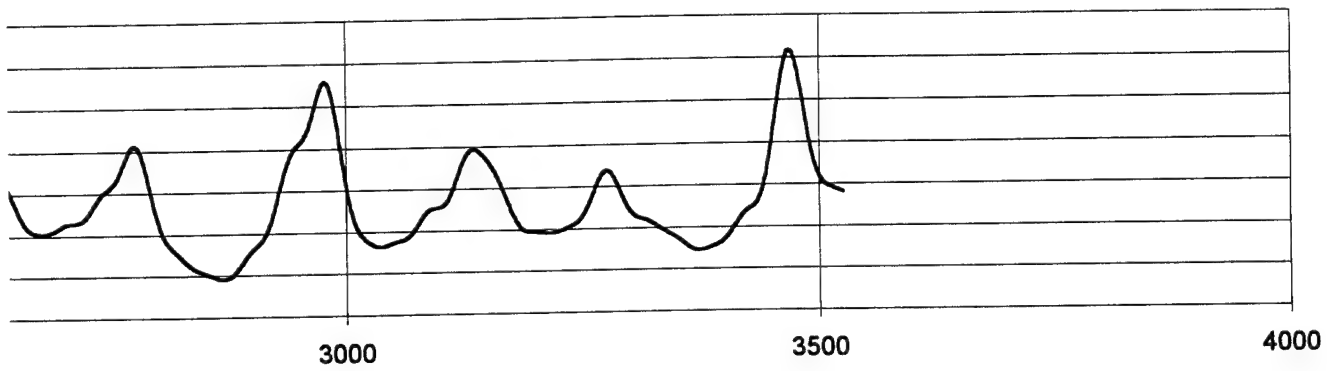
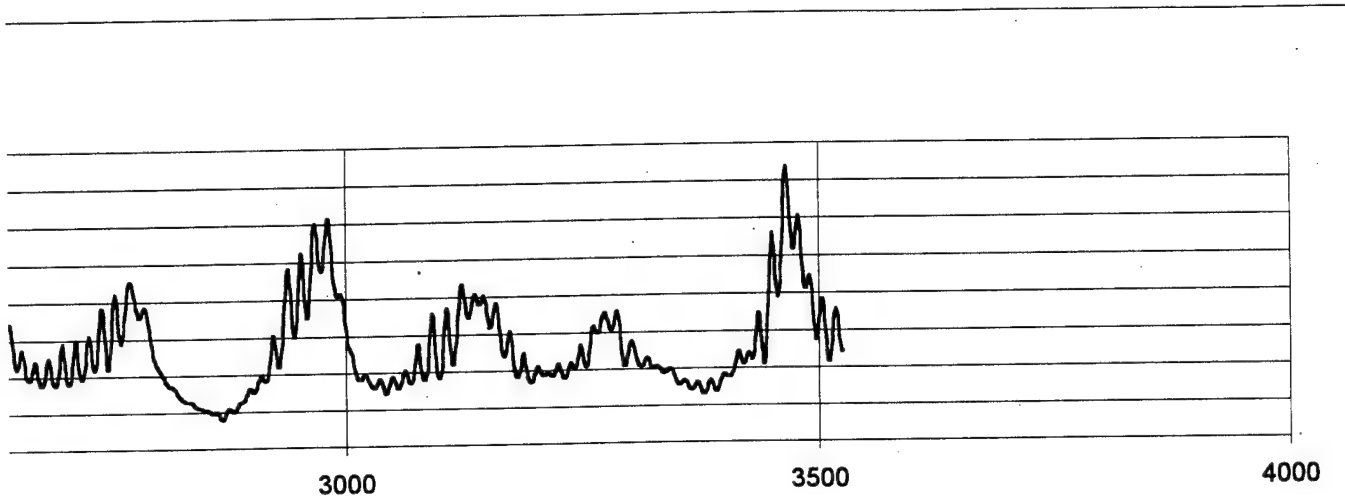
Filtered Low Frequency Time History



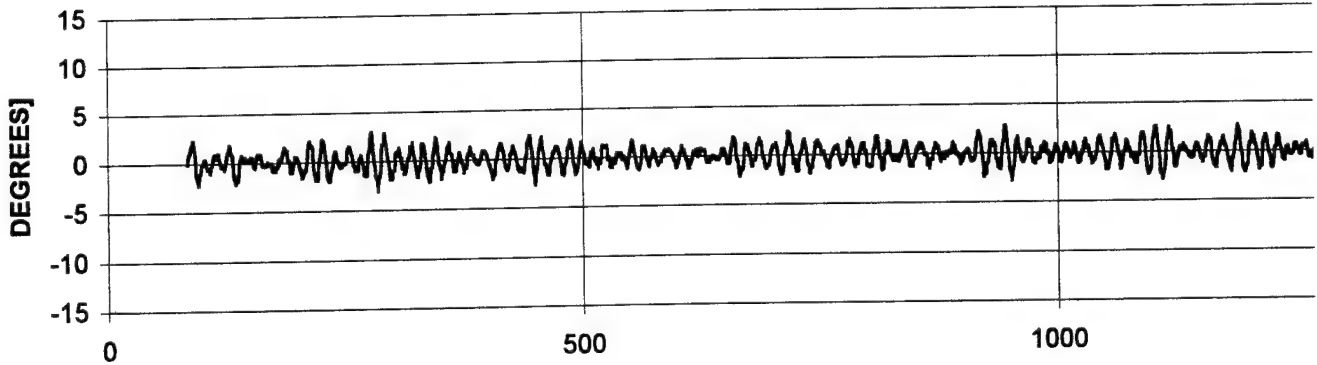
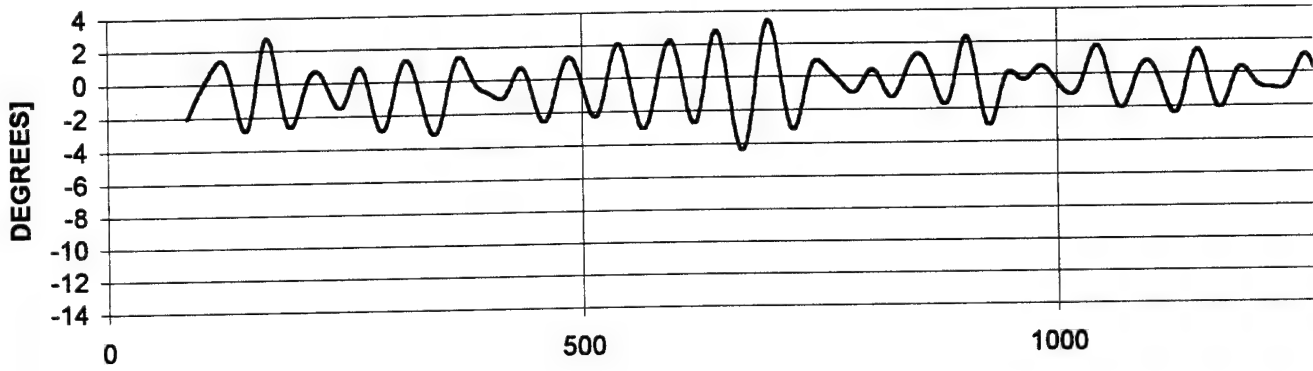
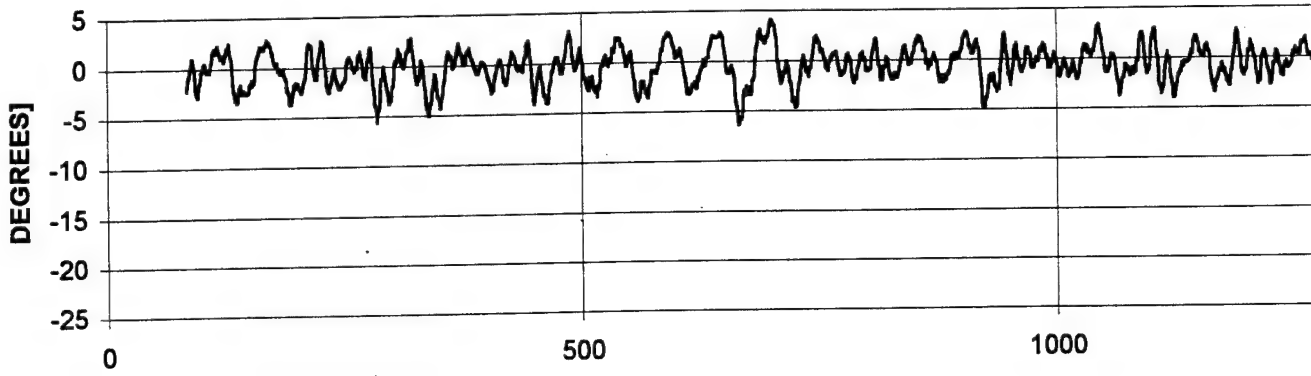
Filtered High Frequency Time History



TEST A1009 - ML_1 TENSION

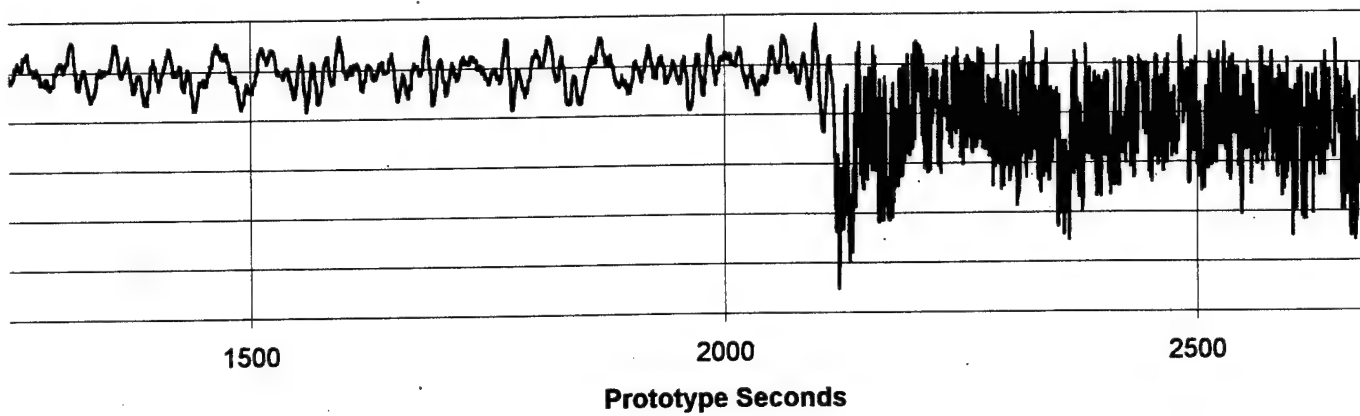


TEST A1009 - PITCH

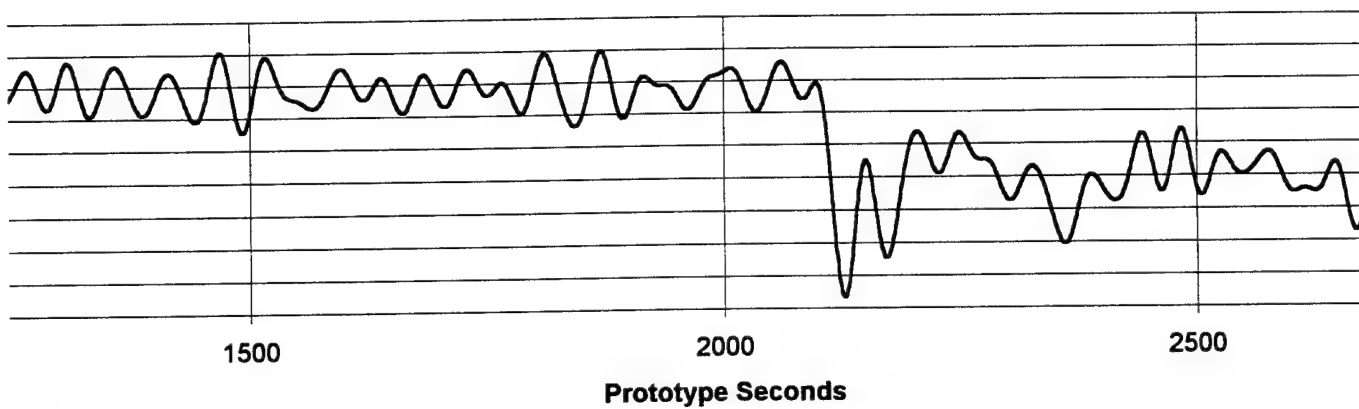


TEST A1009 - PITCH

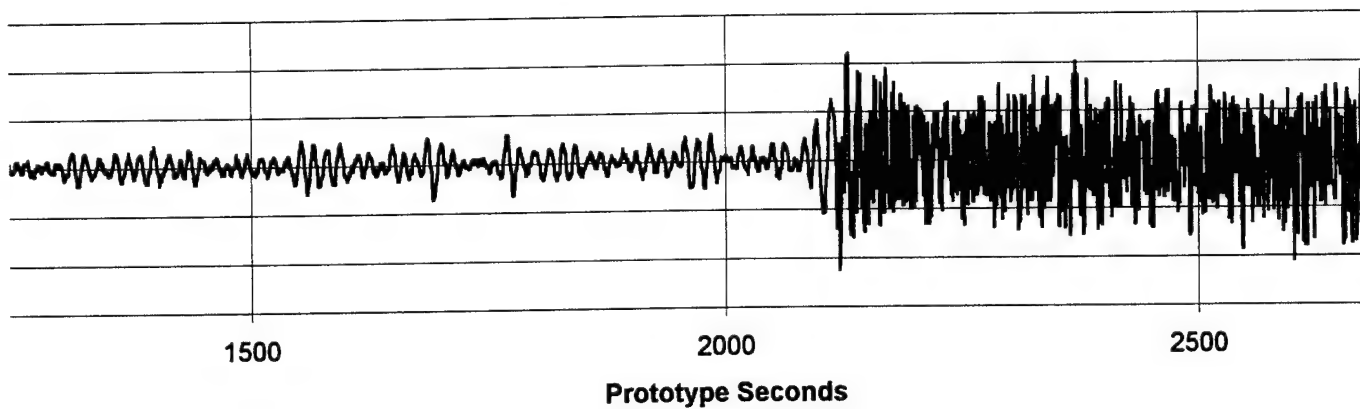
Unfiltered Time History



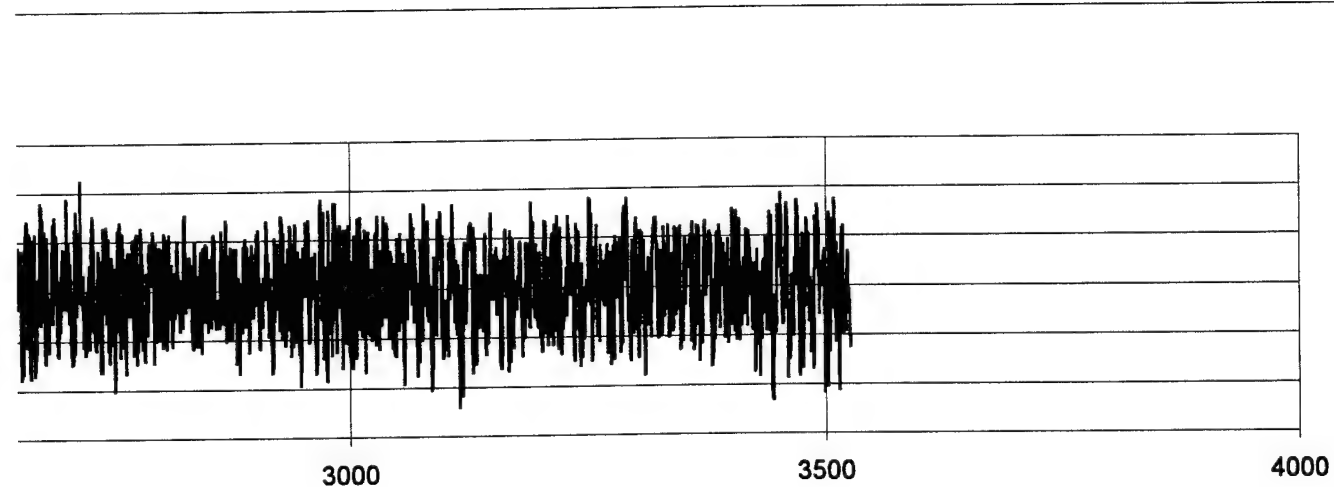
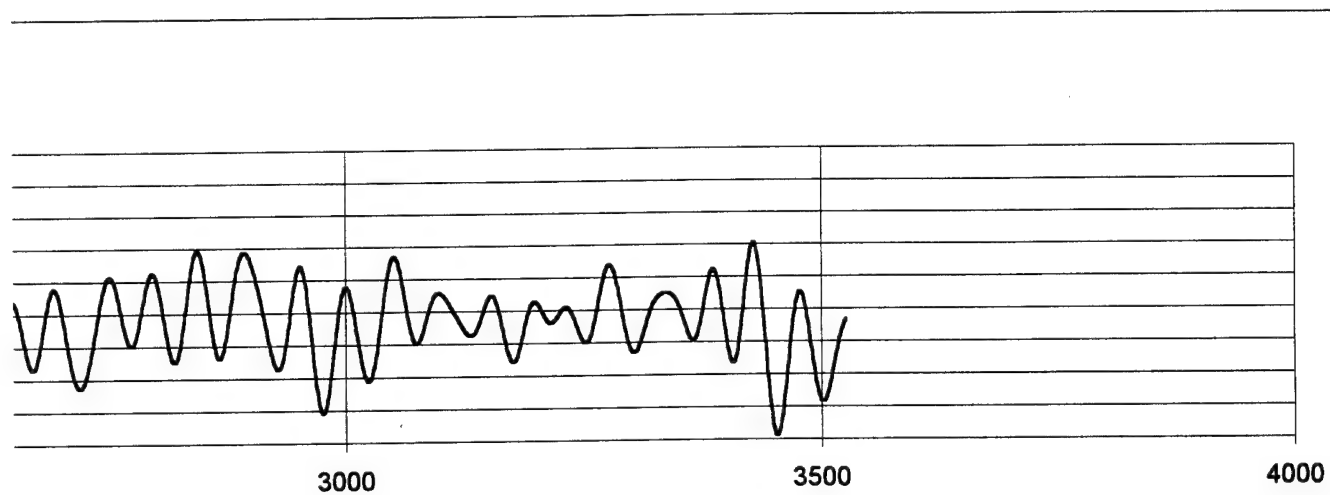
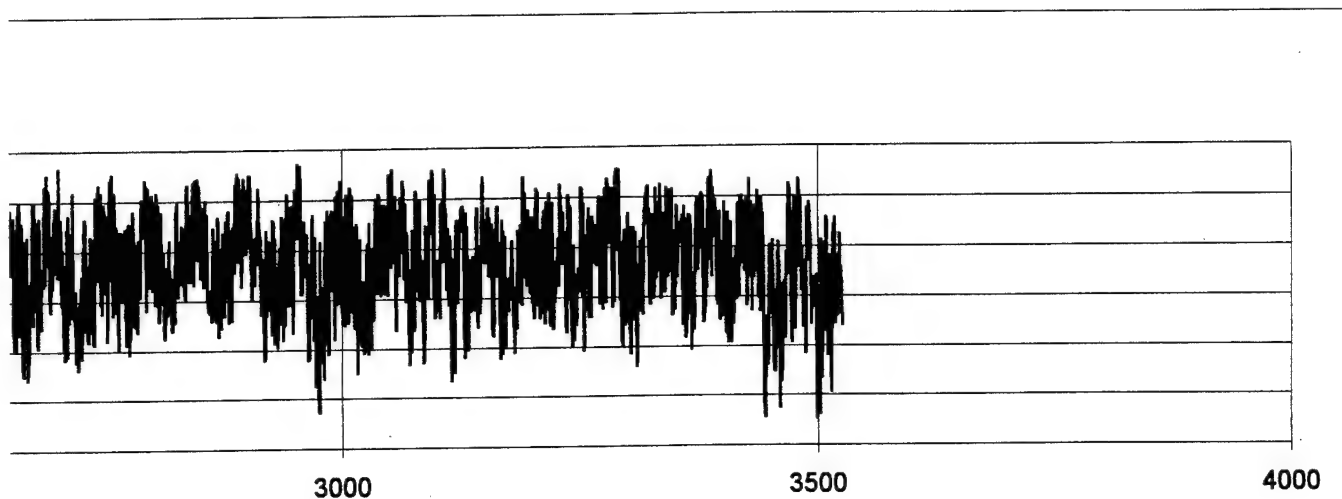
Filtered Low Frequency Time History



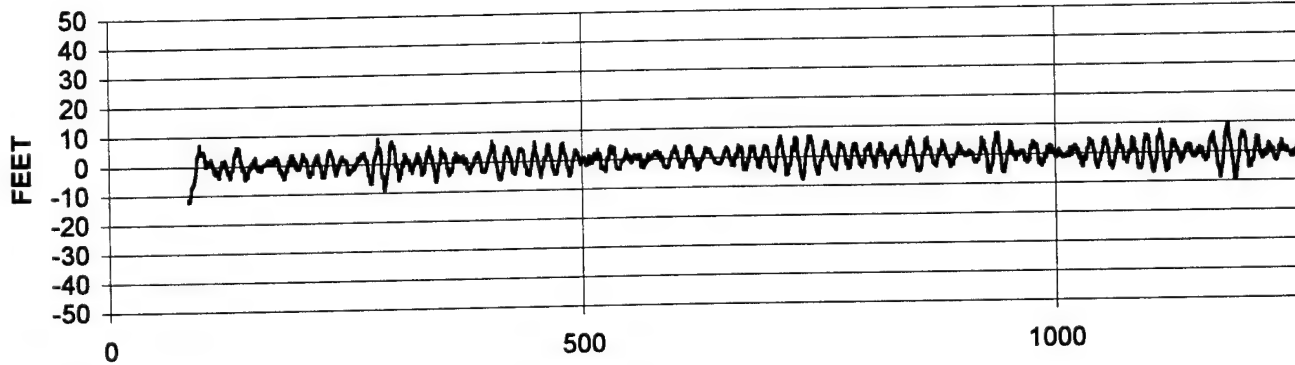
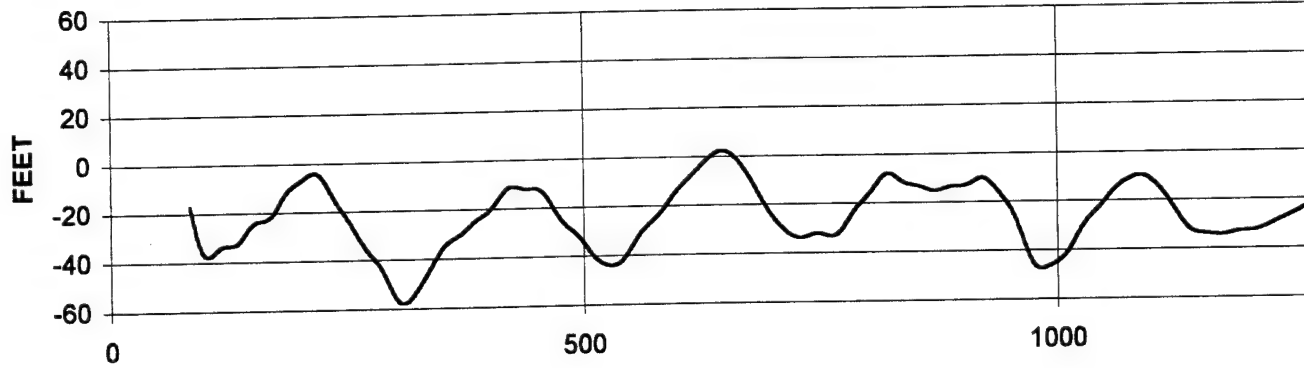
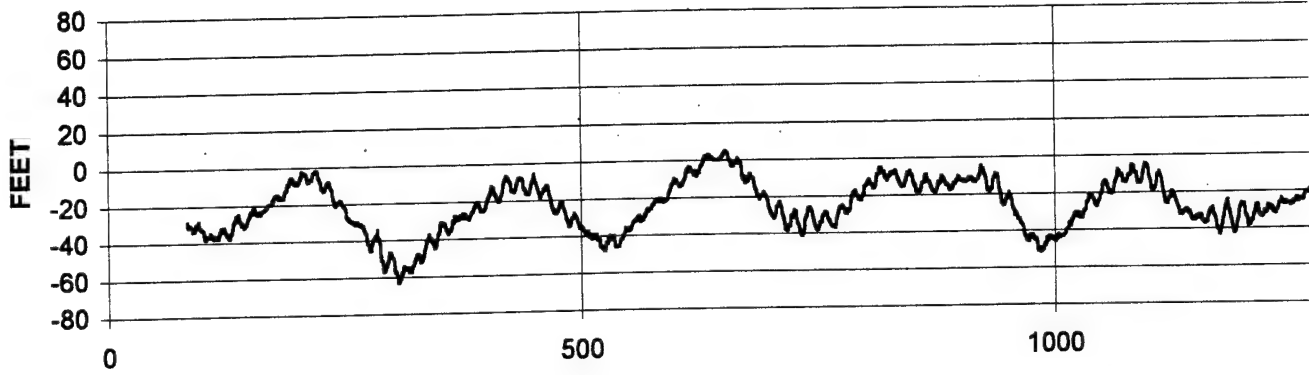
Filtered High Frequency Time History



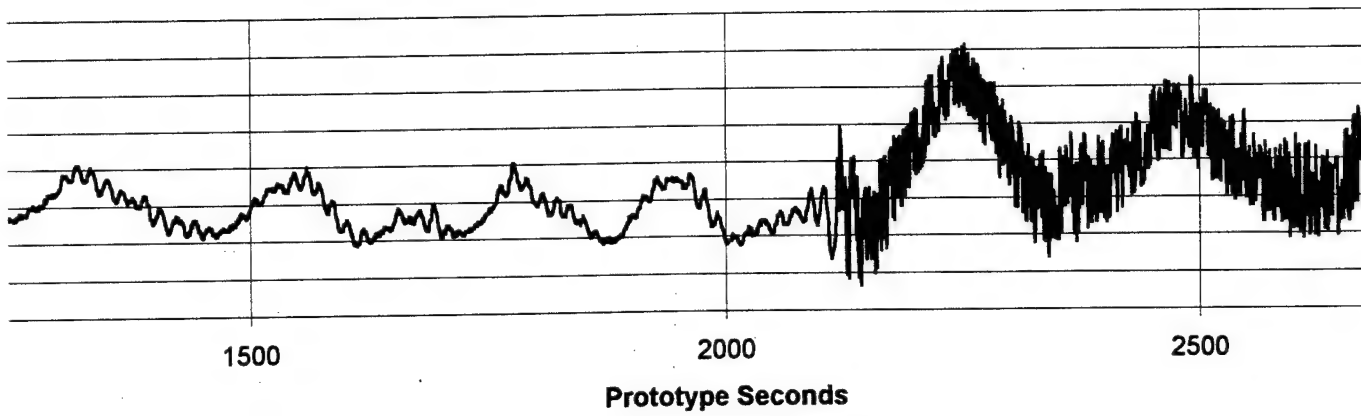
TEST A1009 - PITCH



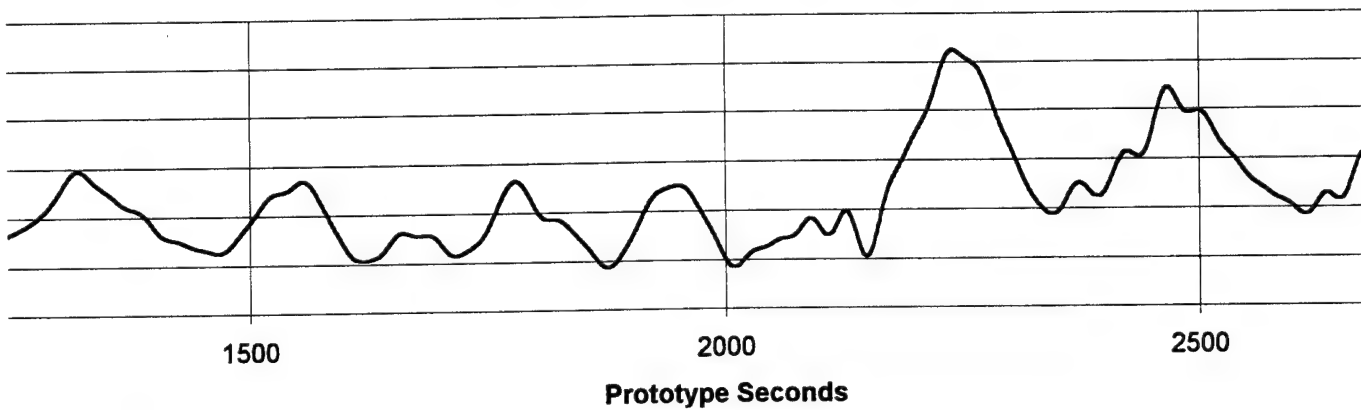
TEST A1009 - PT SURGE



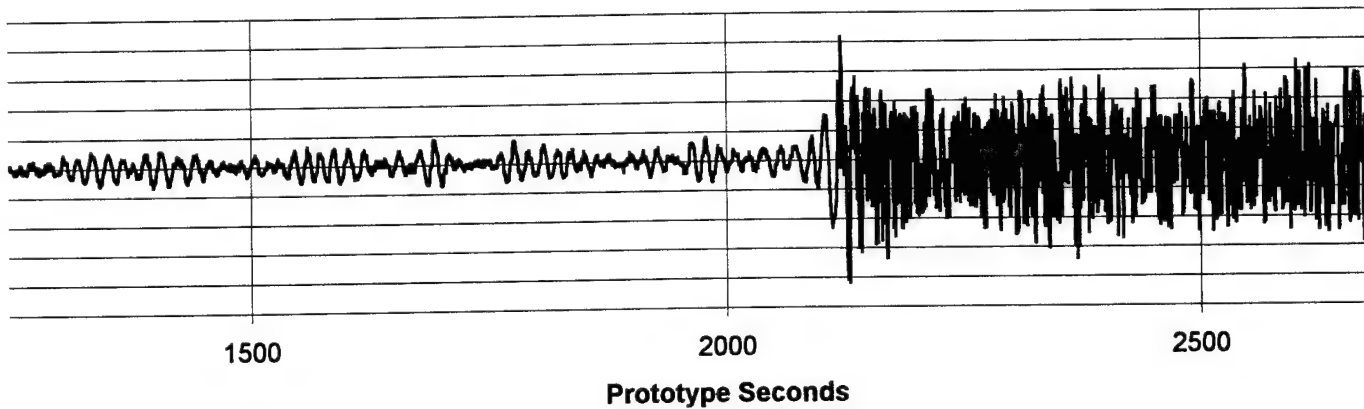
Unfiltered Time History



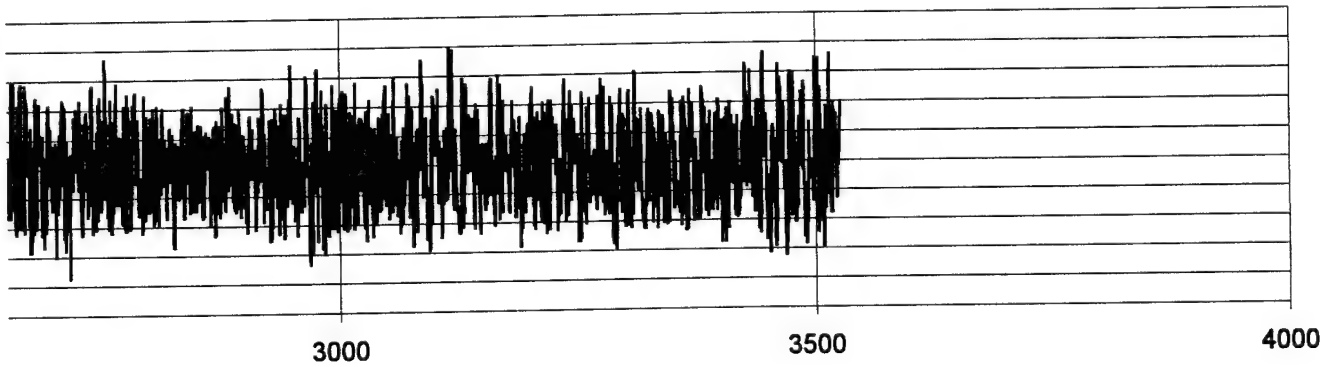
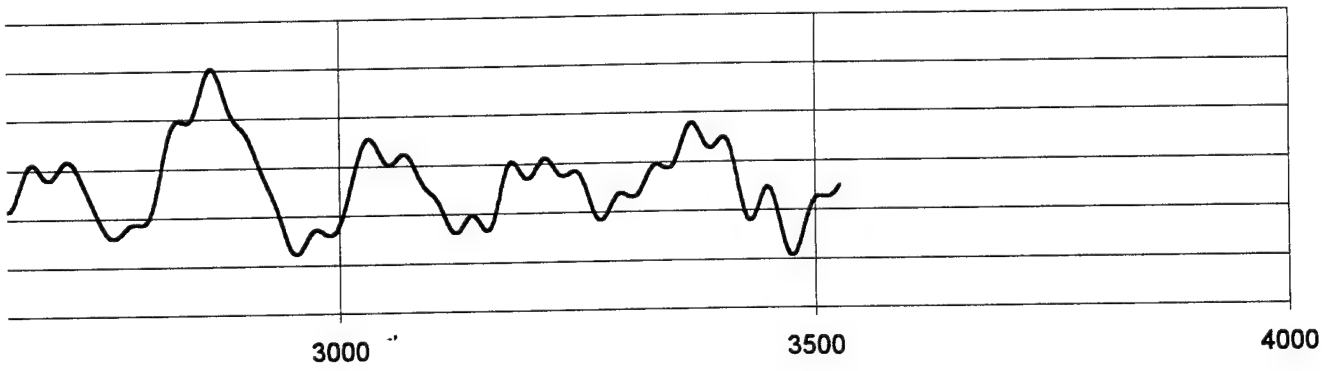
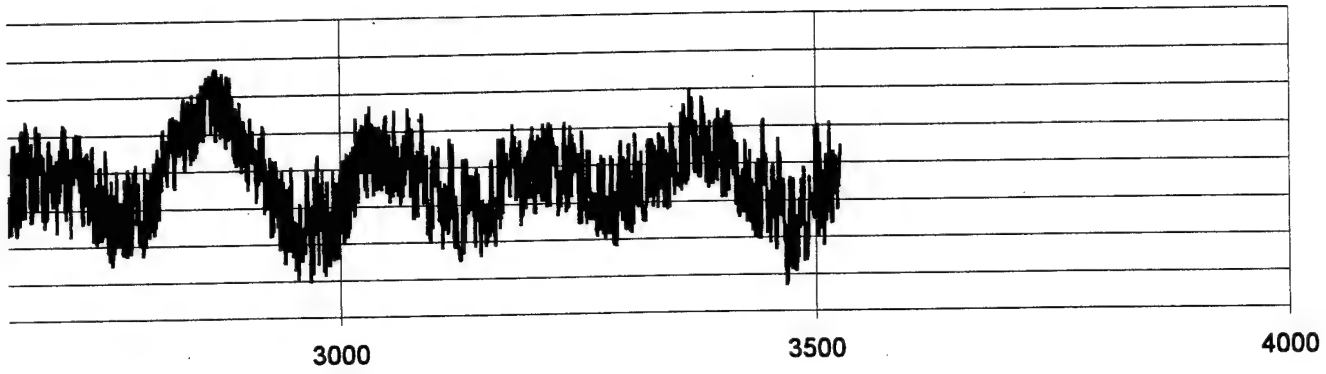
Filtered Low Frequency Time History



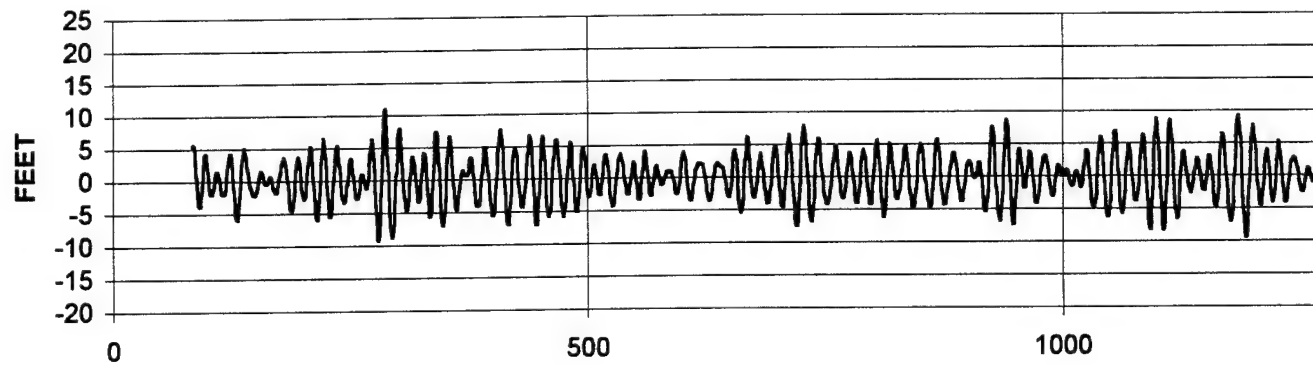
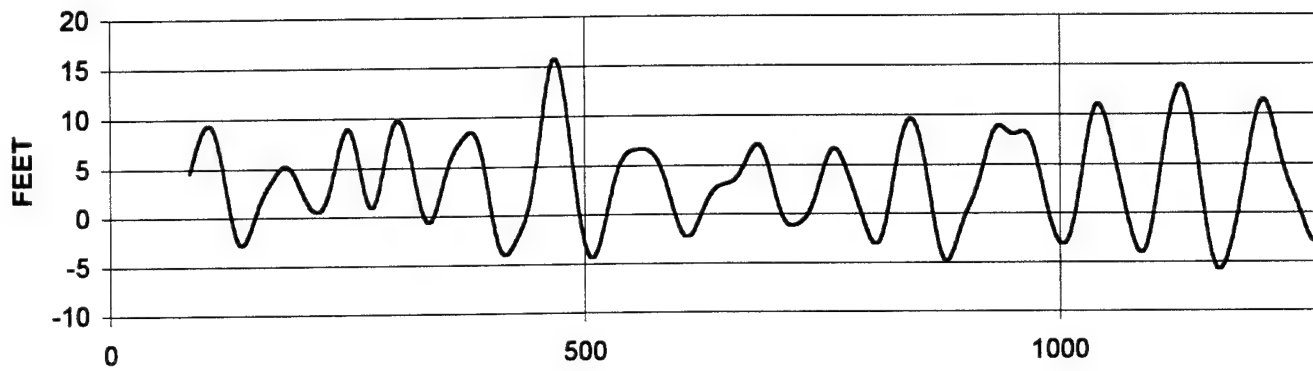
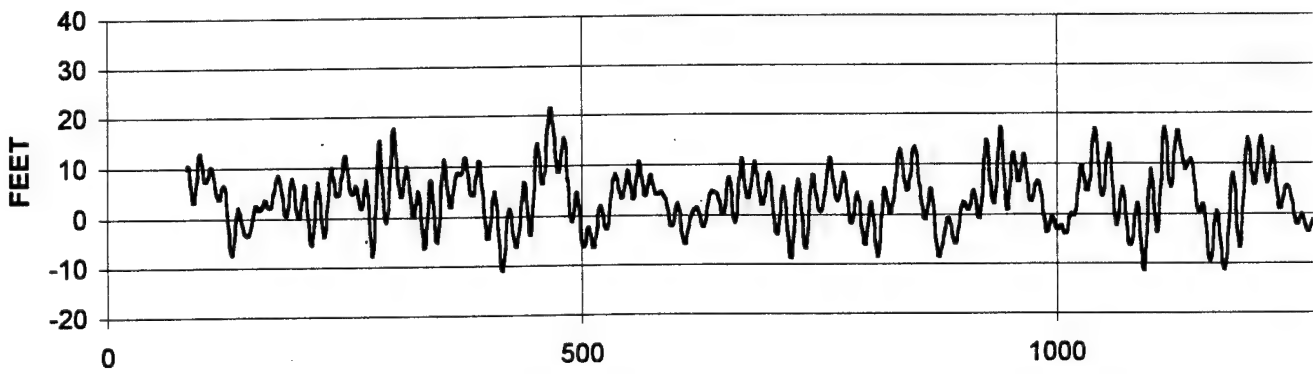
Filtered High Frequency Time History



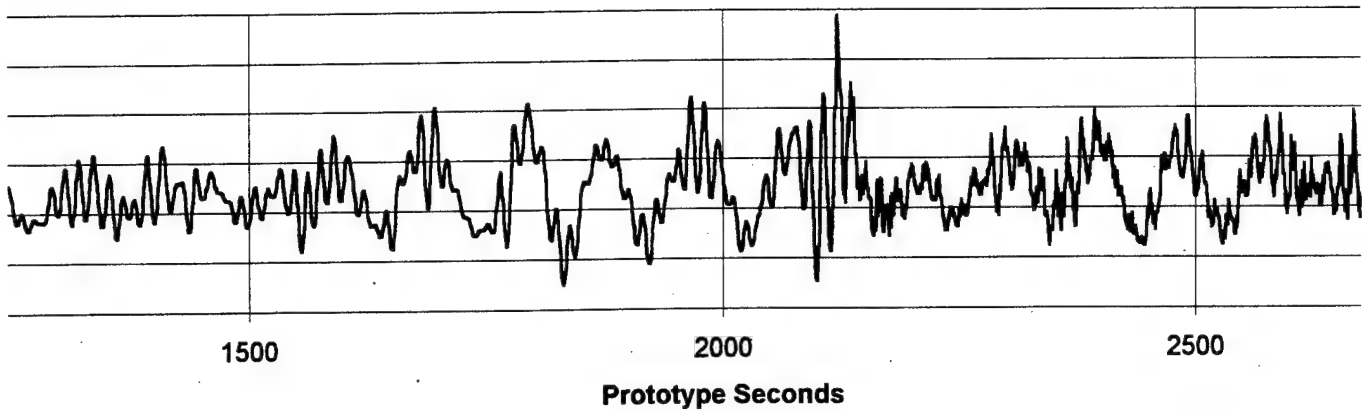
TEST A1009 - PT SURGE



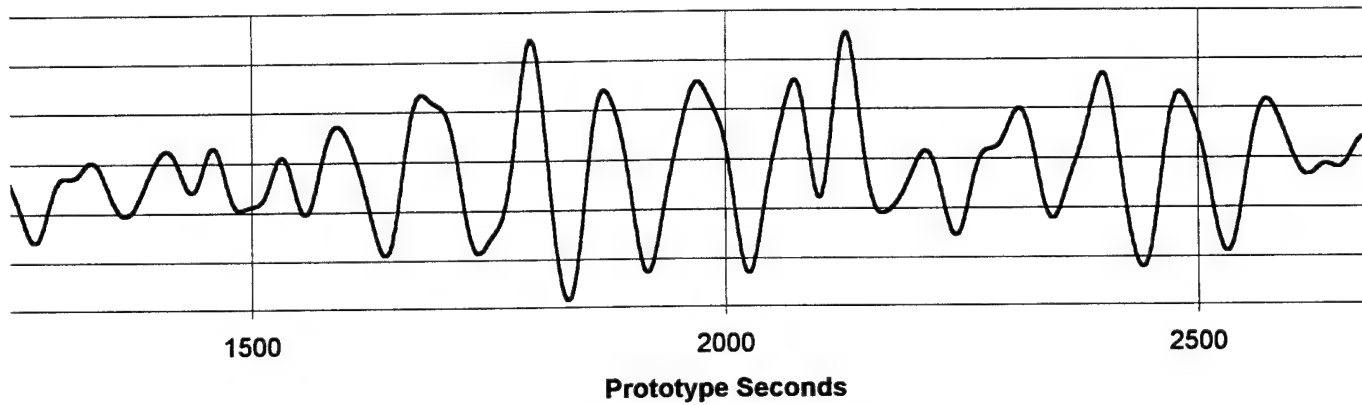
TEST A1009 - PT HEAVE



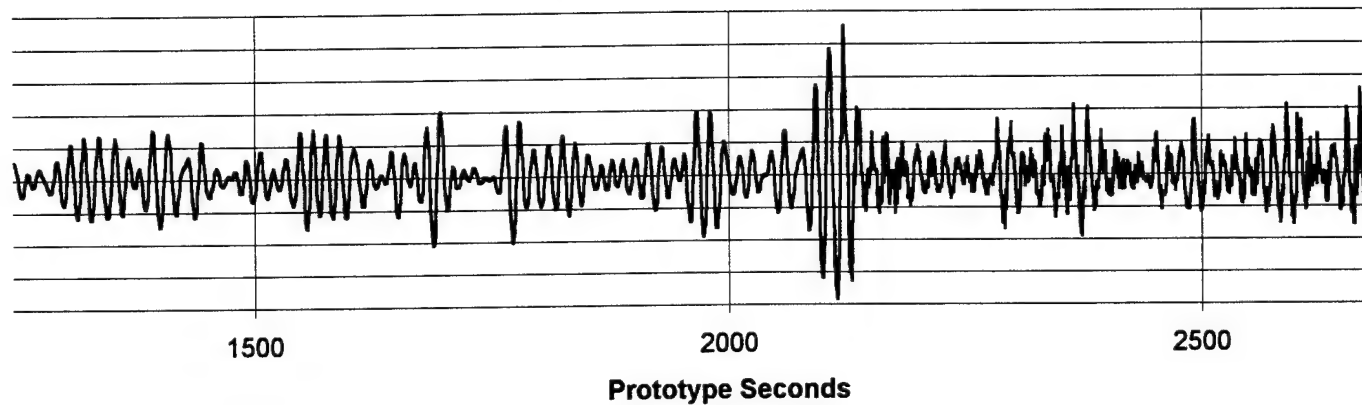
Unfiltered Time History



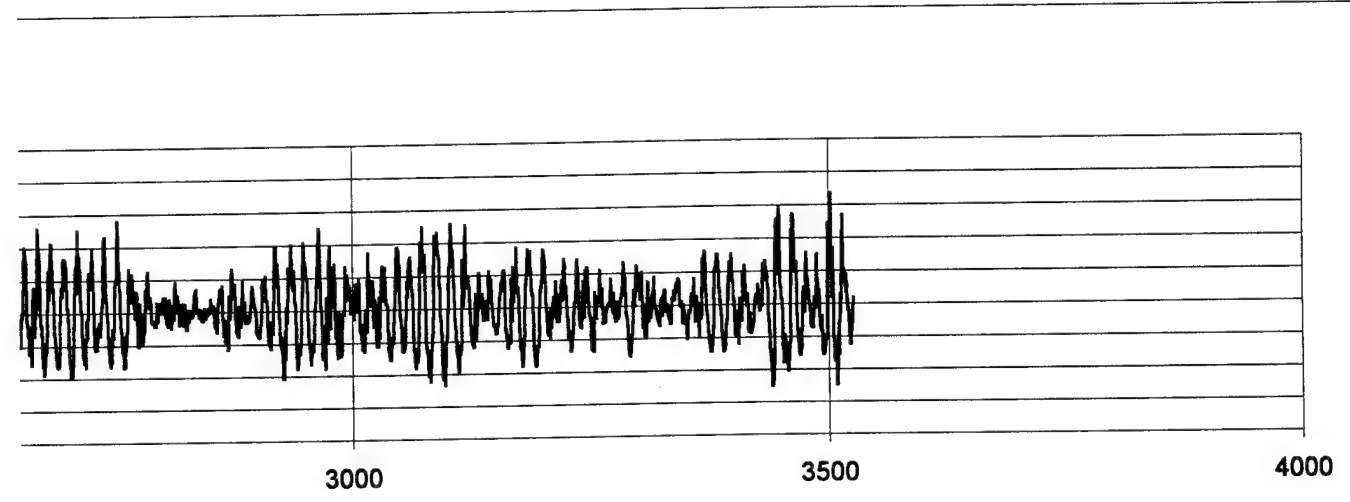
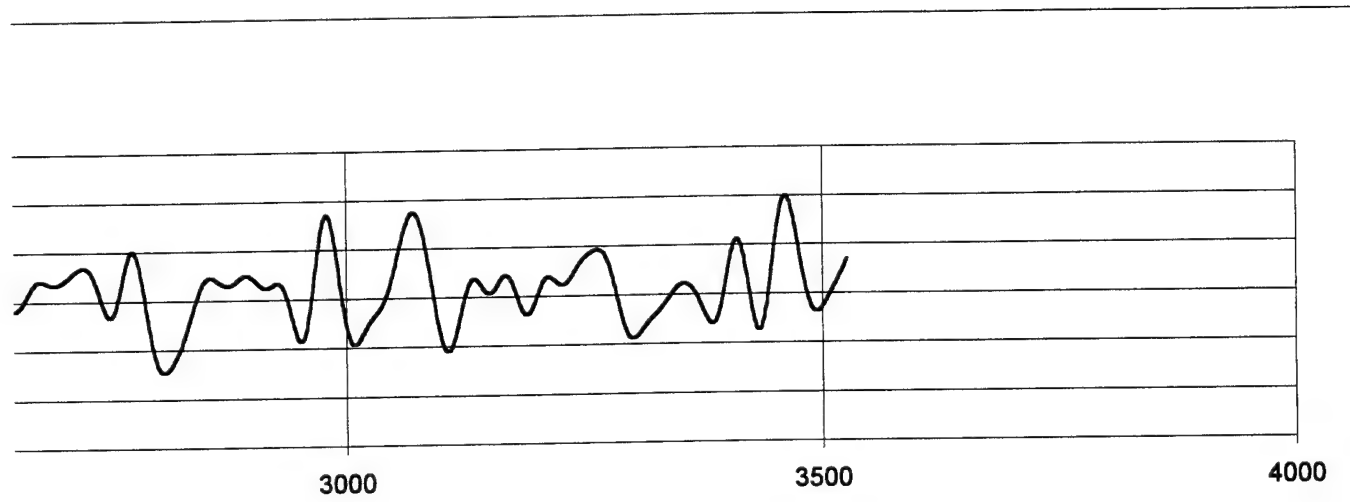
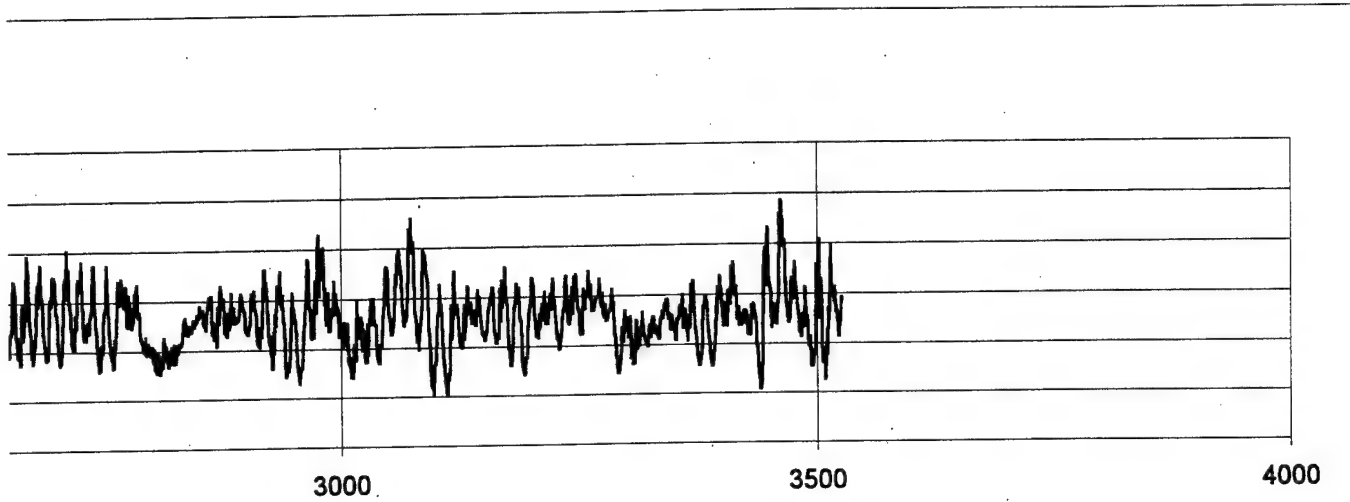
Filtered Low Frequency Time History



Filtered High Frequency Time History

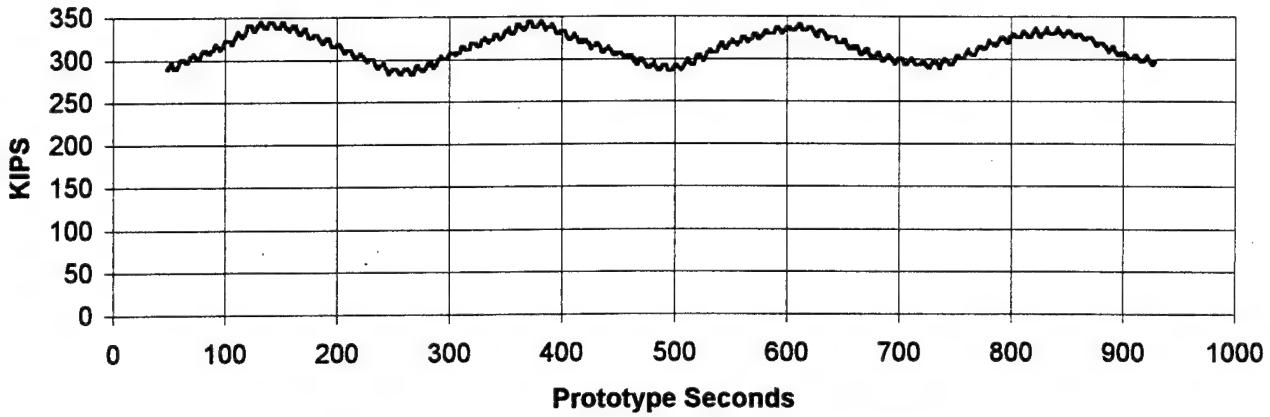


TEST A1009 - PT HEAVE

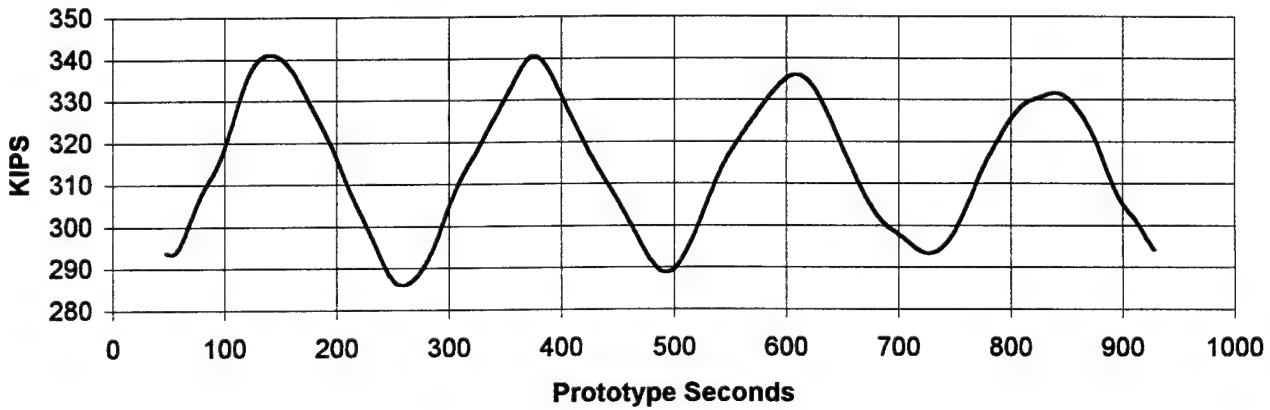


TEST A1103 - ML_1 TENSION

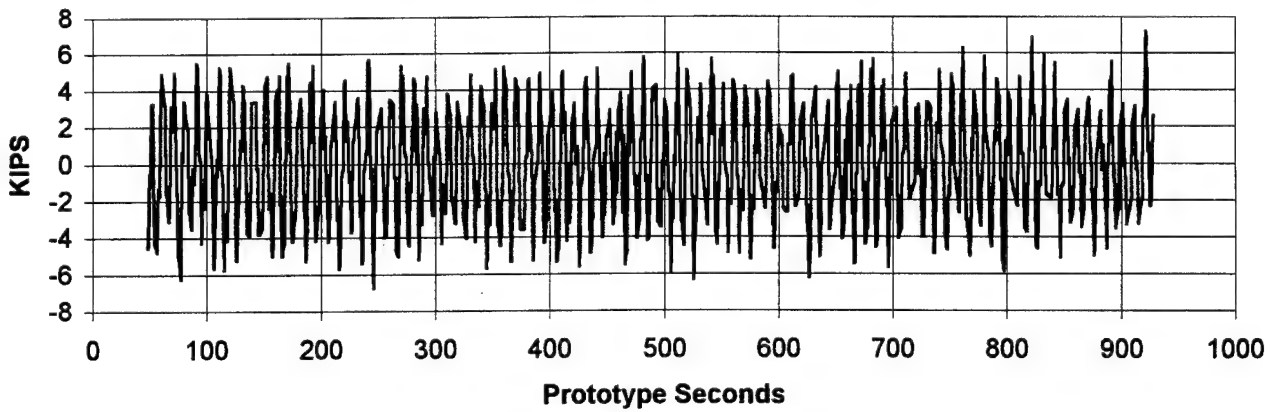
Unfiltered Time History



Filtered Low Frequency Time History

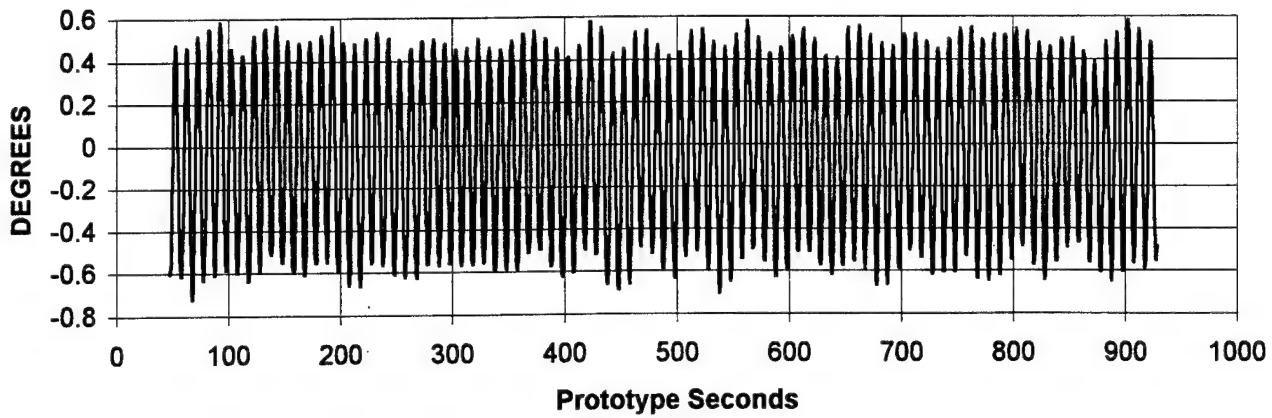


Filtered High Frequency Time History

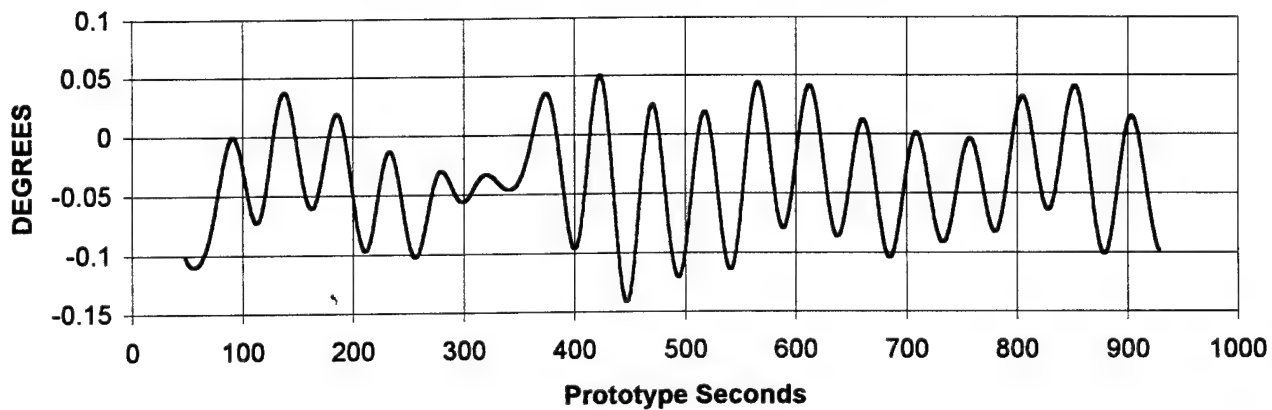


TEST A1103 - PITCH

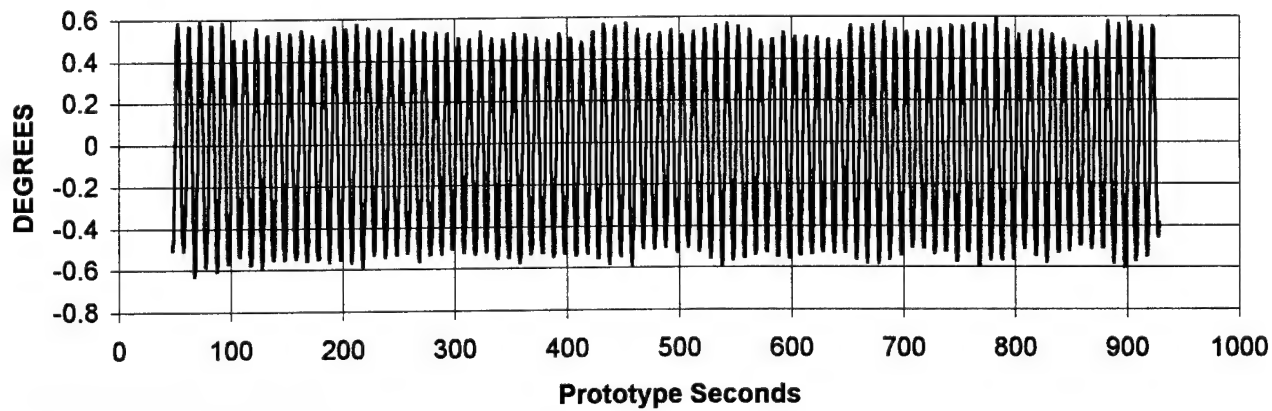
Unfiltered Time History



Filtered Low Frequency Time History

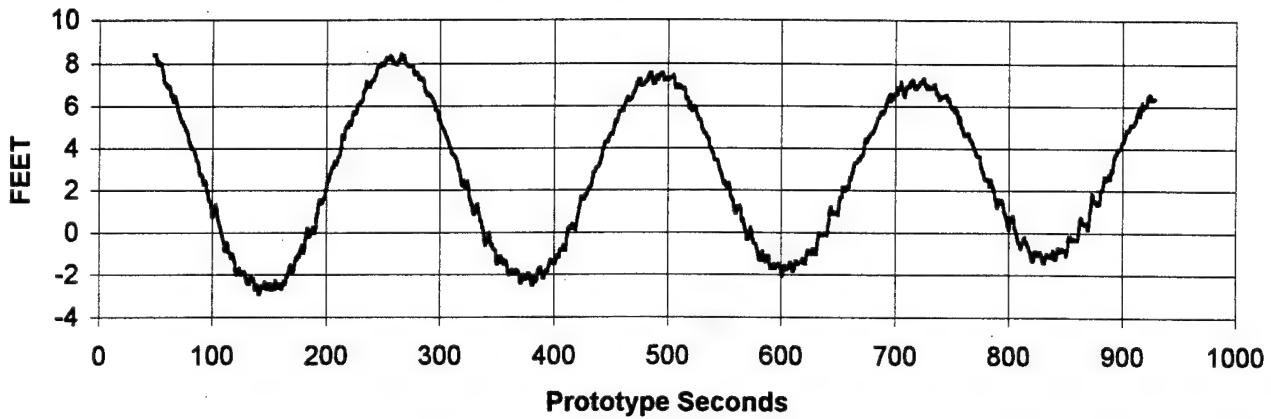


Filtered High Frequency Time History

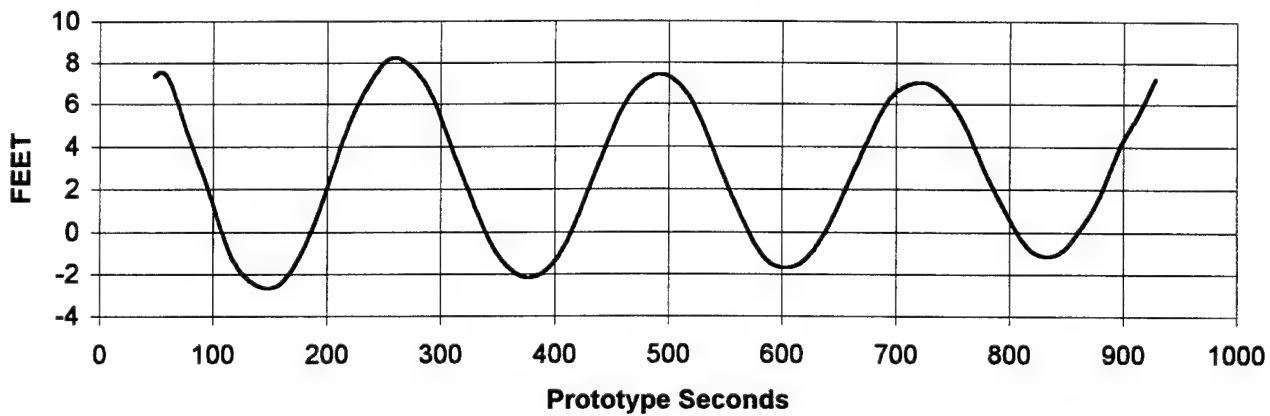


TEST A1103 - PT SURGE

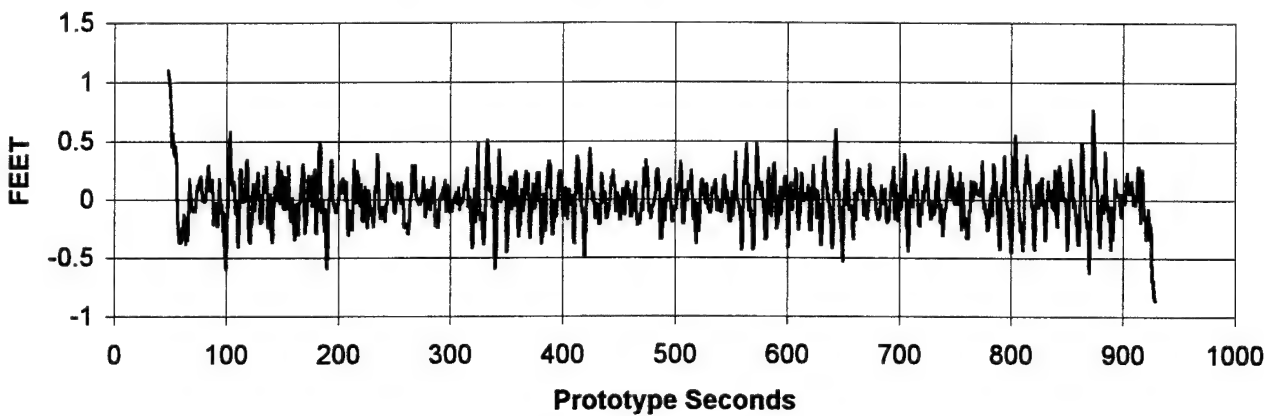
Unfiltered Time History



Filtered Low Frequency Time History

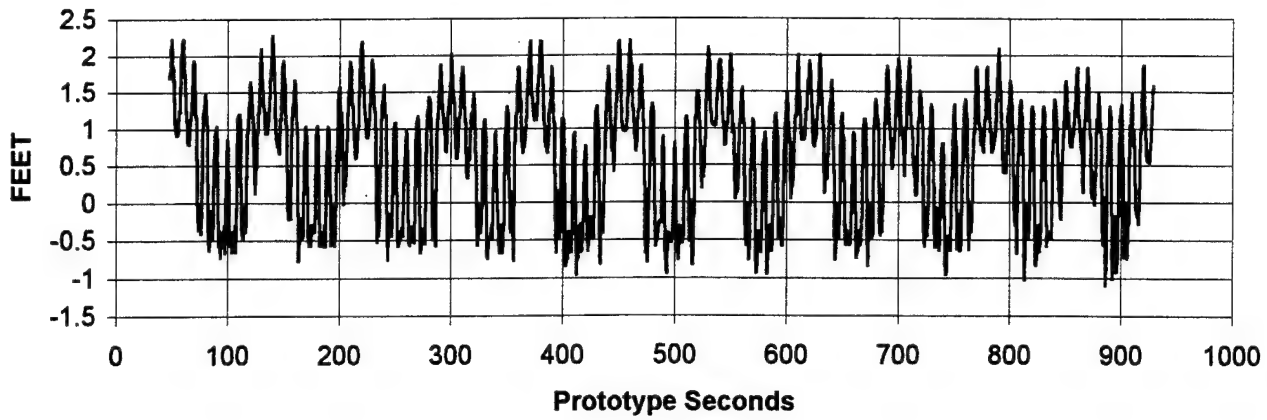


Filtered High Frequency Time History

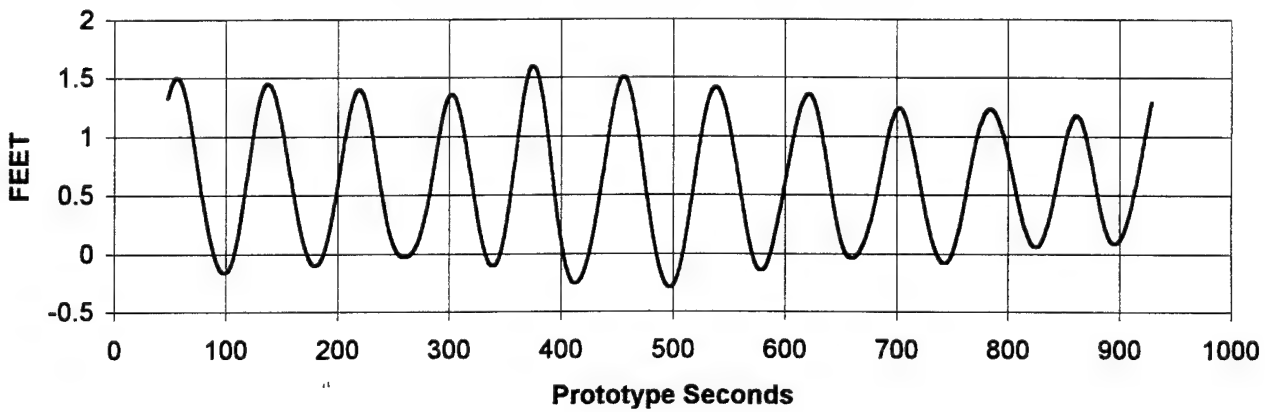


TEST A1103 - PT HEAVE

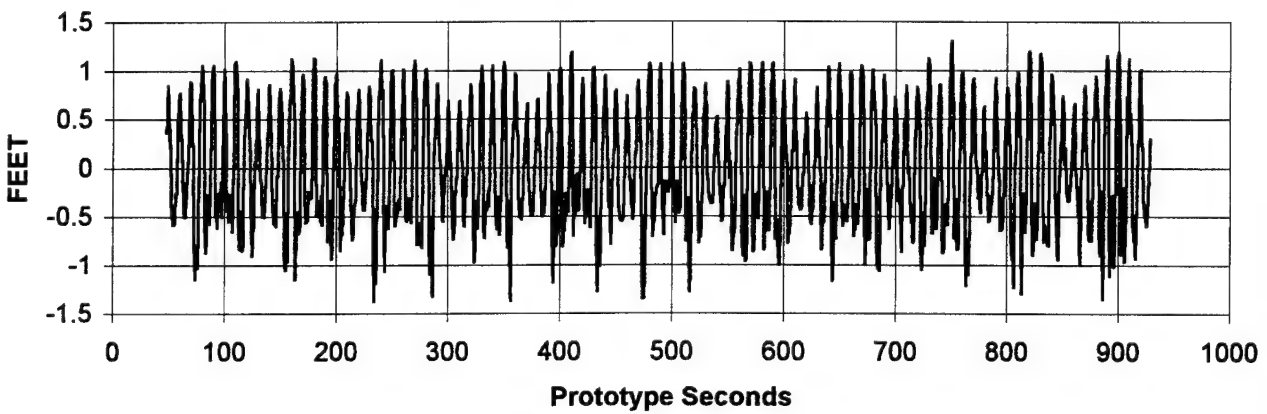
Unfiltered Time History



Filtered Low Frequency Time History

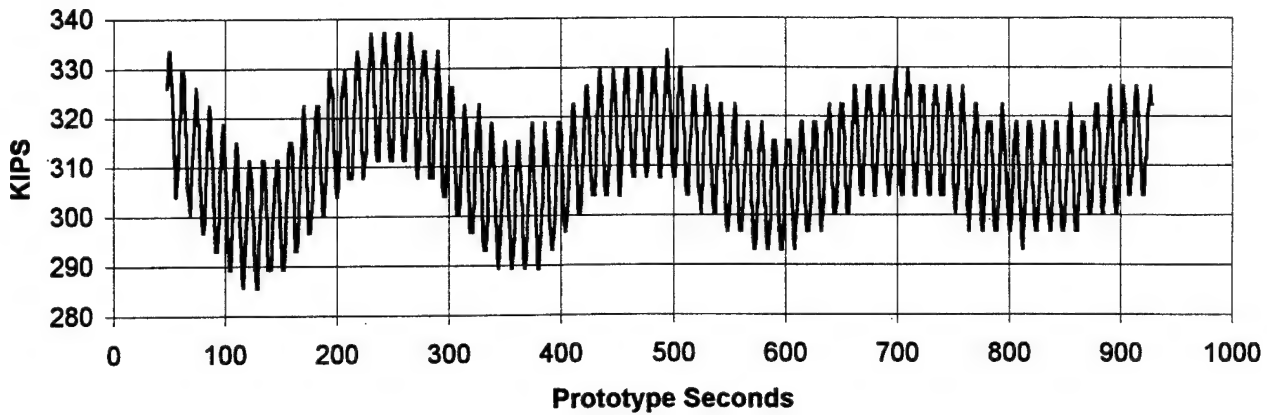


Filtered High Frequency Time History

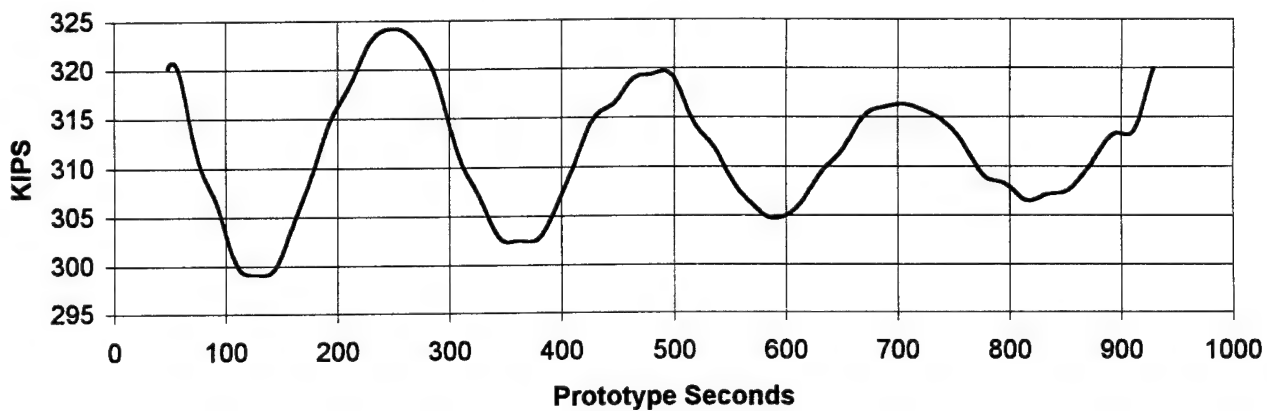


TEST A1104 - ML_1 TENSION

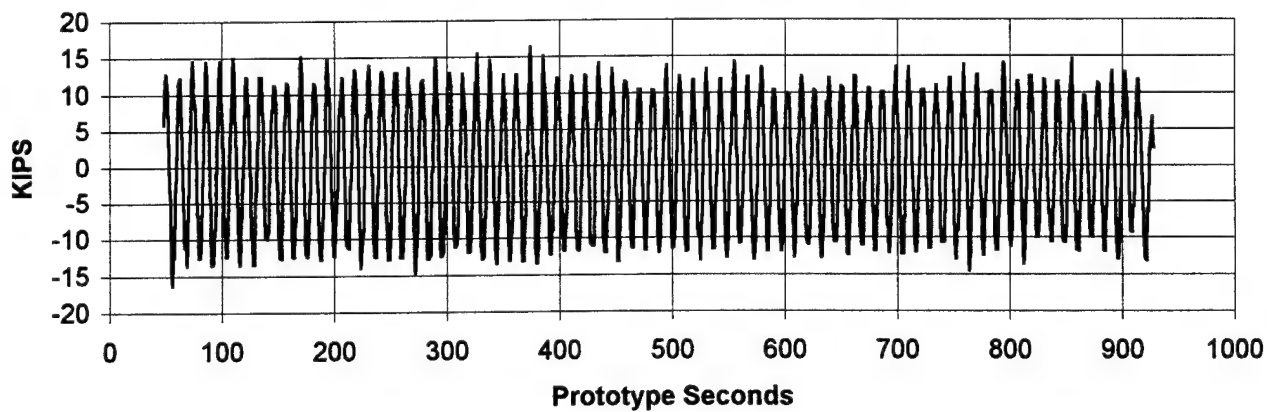
Unfiltered Time History



Filtered Low Frequency Time History

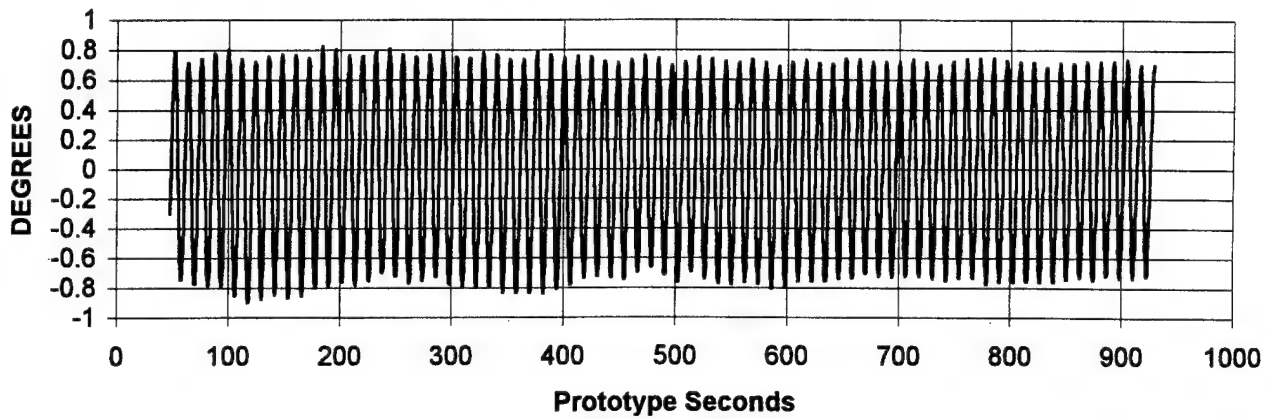


Filtered High Frequency Time History

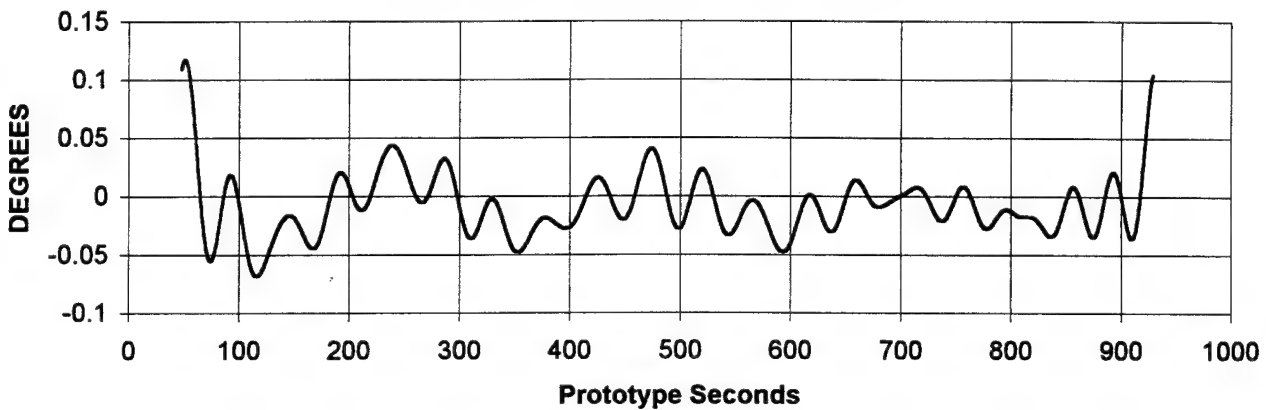


TEST A1104 - PITCH

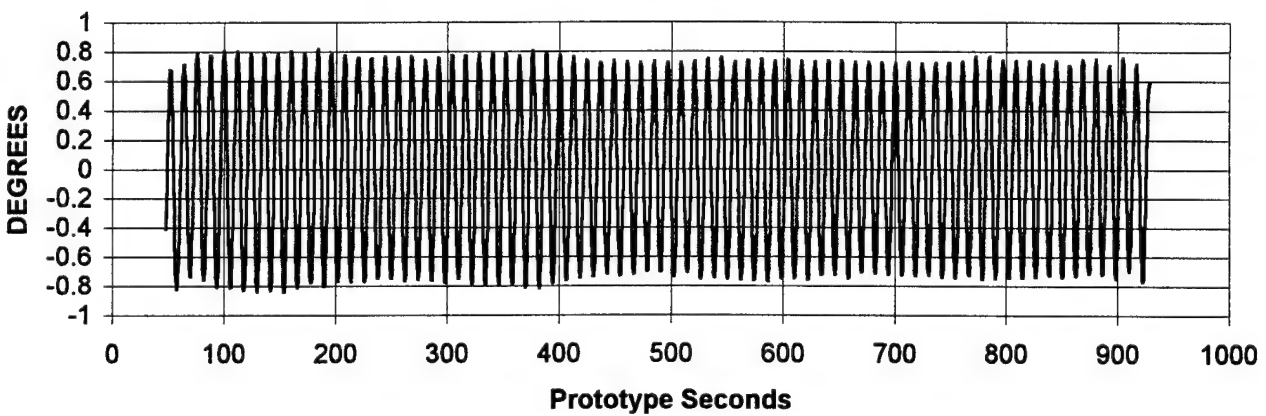
Unfiltered Time History



Filtered Low Frequency Time History

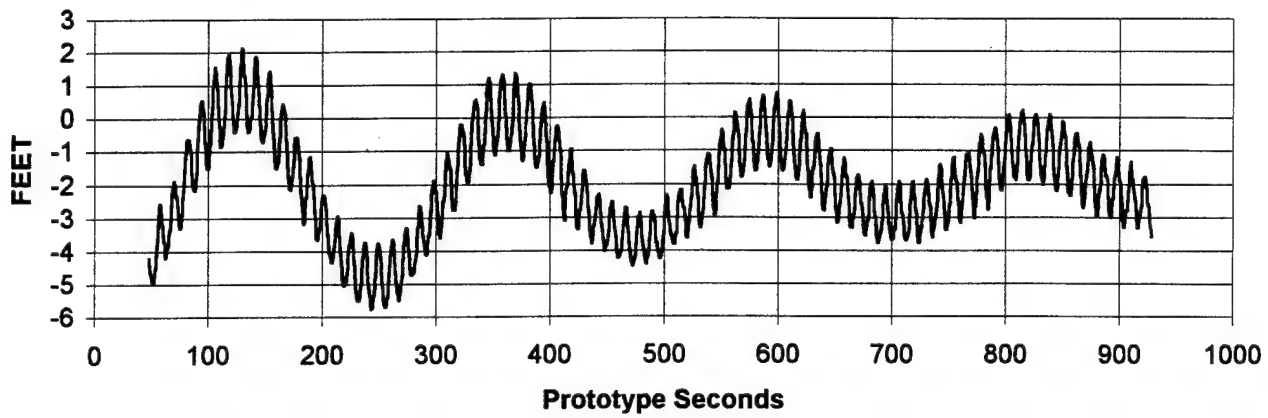


Filtered High Frequency Time History

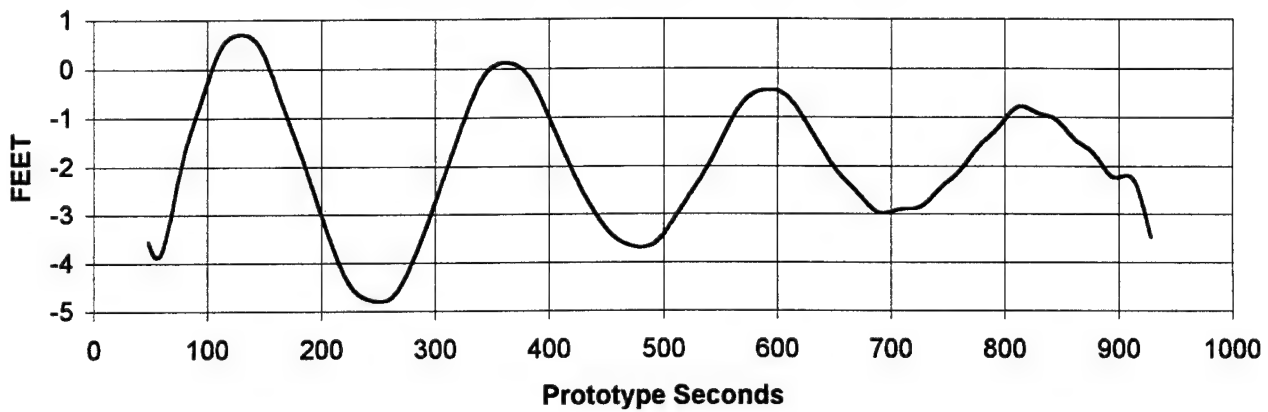


TEST A1104 - PT SURGE

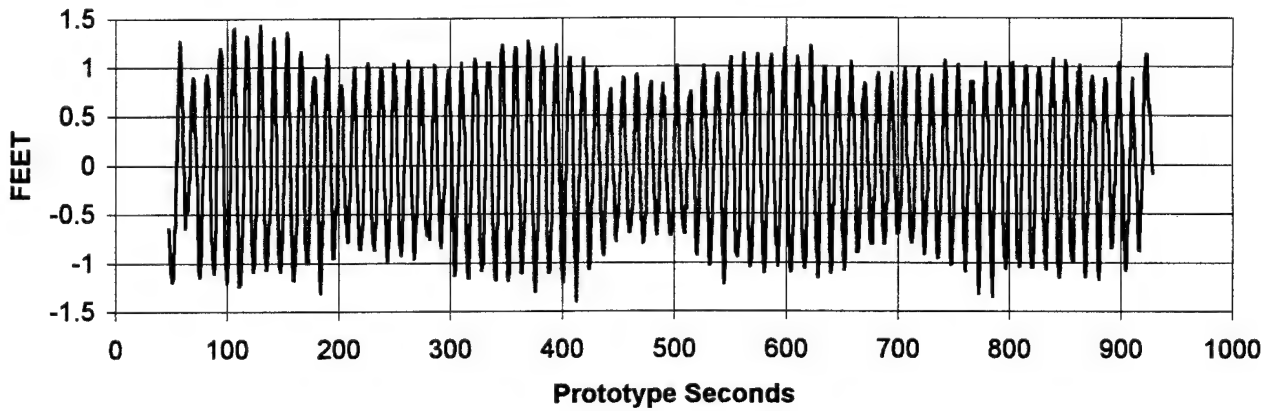
Unfiltered Time History



Filtered Low Frequency Time History

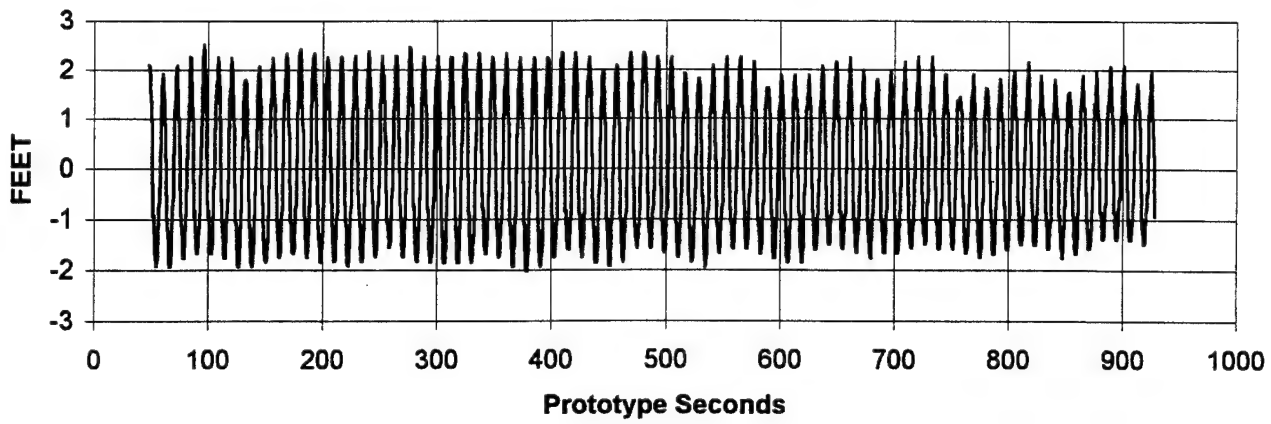


Filtered High Frequency Time History

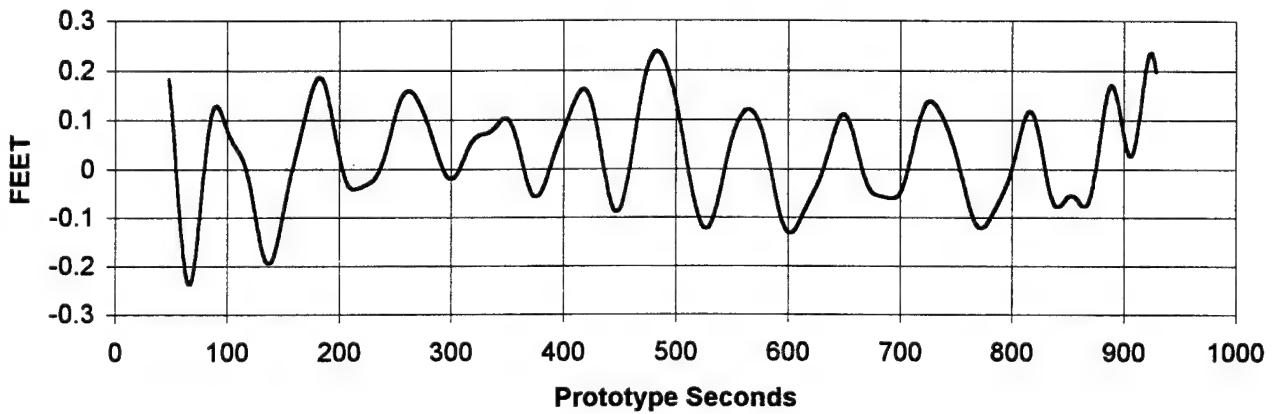


TEST A1104 - PT HEAVE

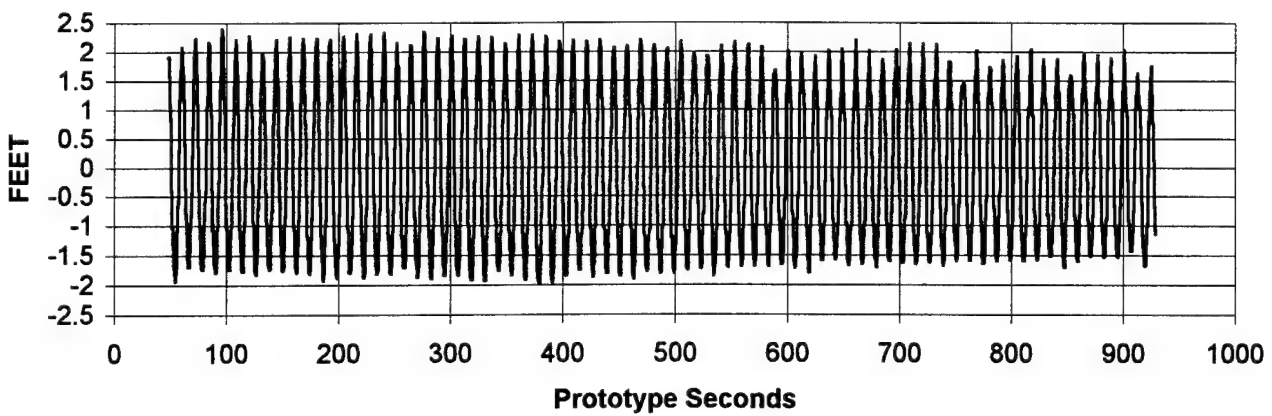
Unfiltered Time History



Filtered Low Frequency Time History

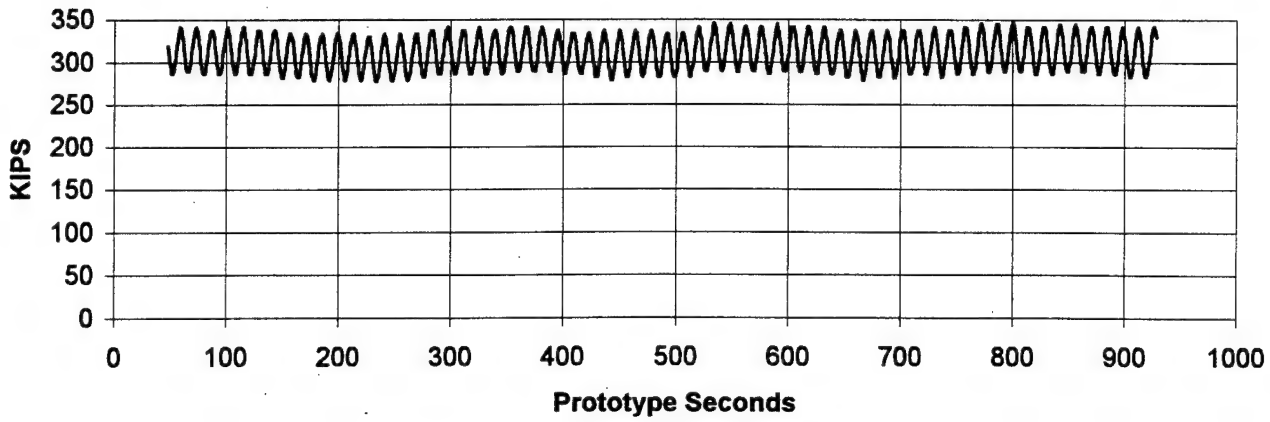


Filtered High Frequency Time History

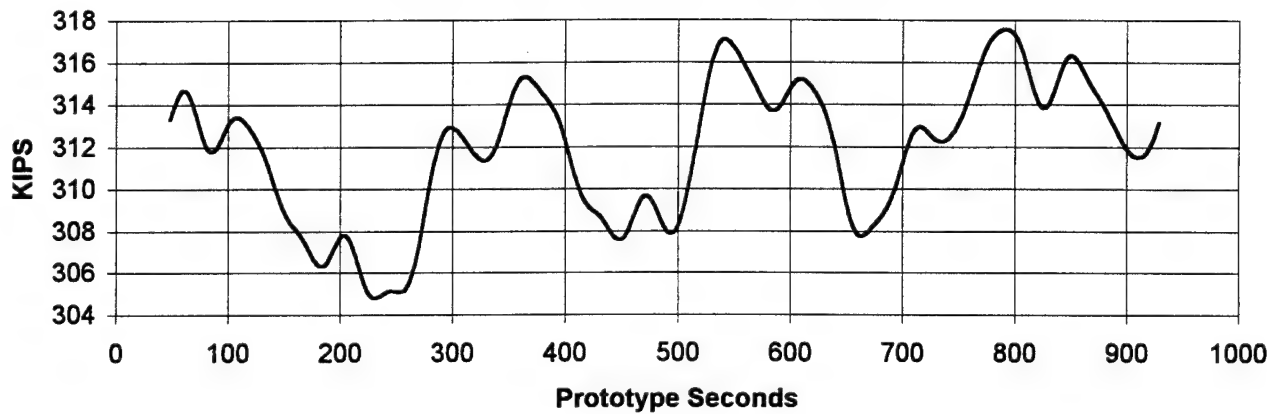


TEST A1105 - ML_1 TENSION

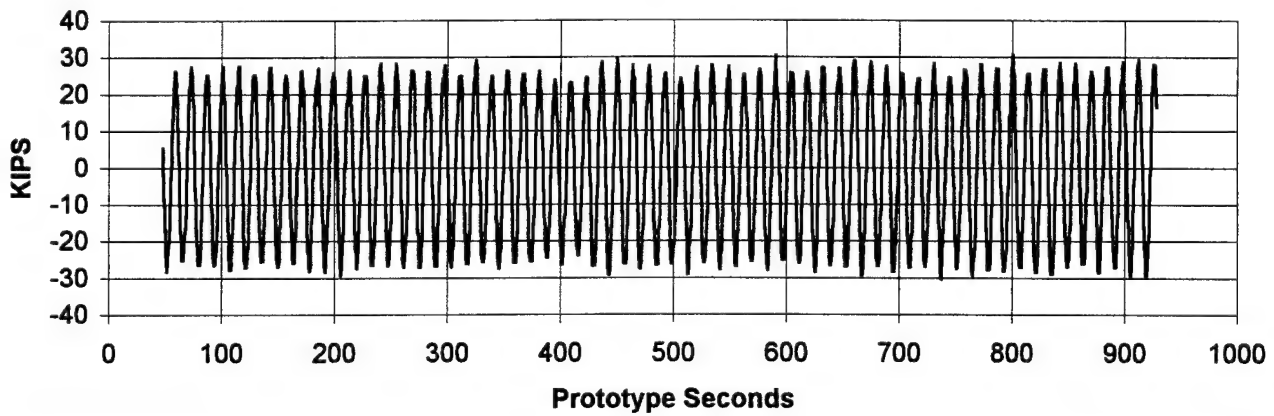
Unfiltered Time History



Filtered Low Frequency Time History

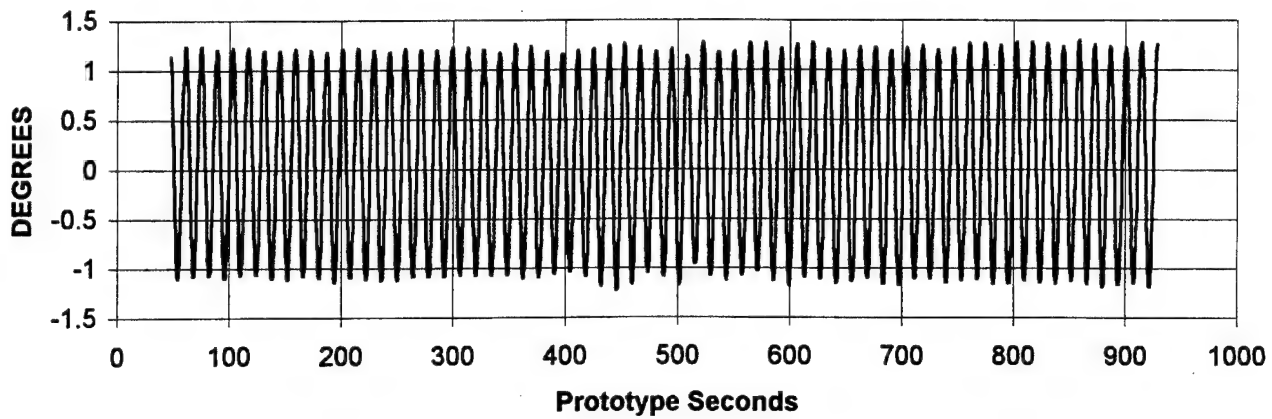


Filtered High Frequency Time History

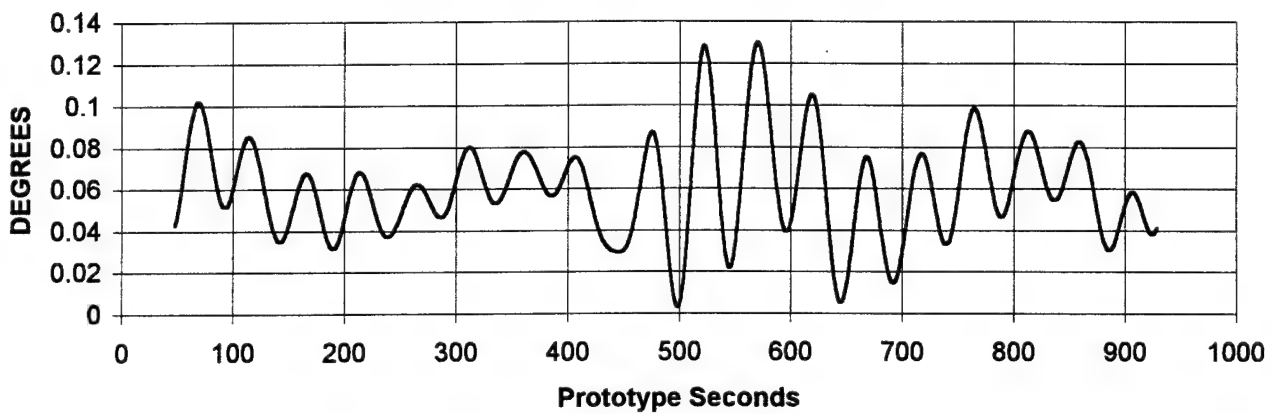


TEST A1105 - PITCH

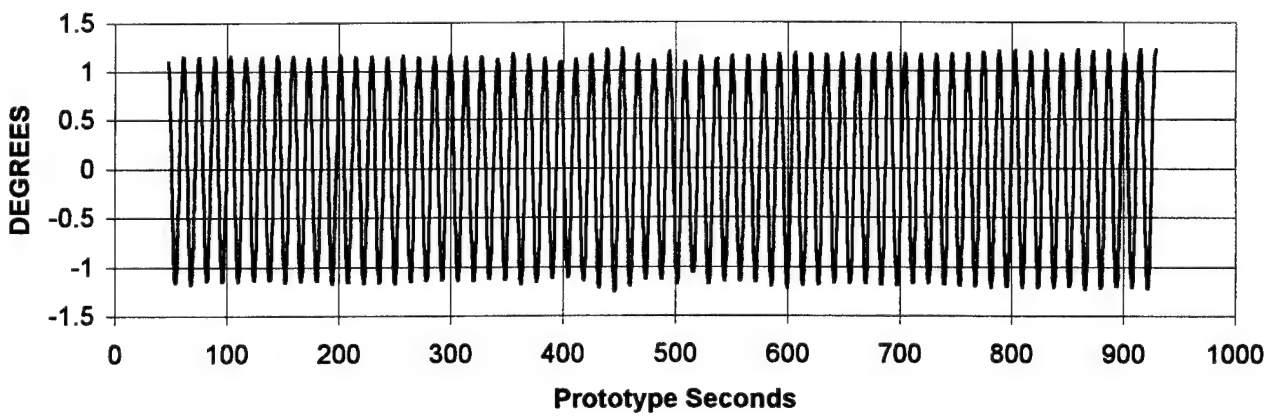
Unfiltered Time History



Filtered Low Frequency Time History

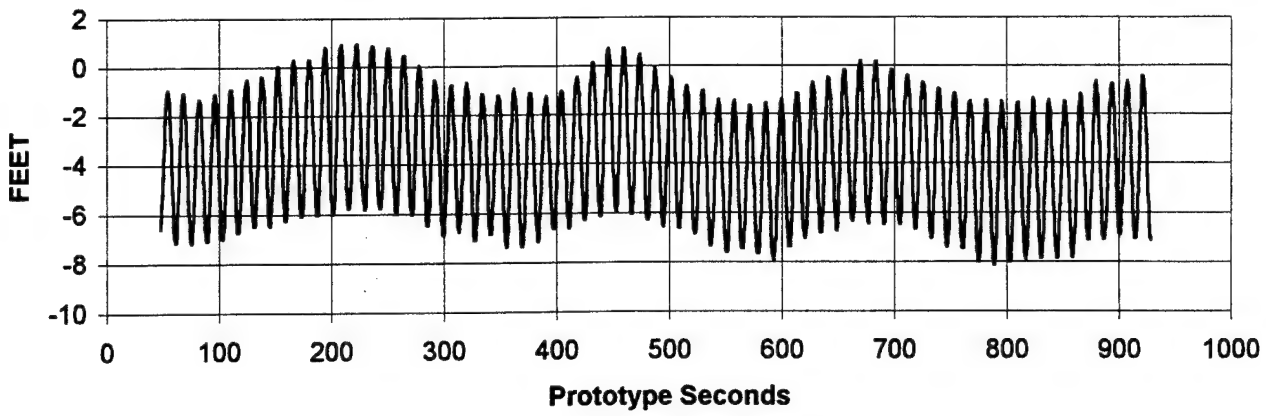


Filtered High Frequency Time History

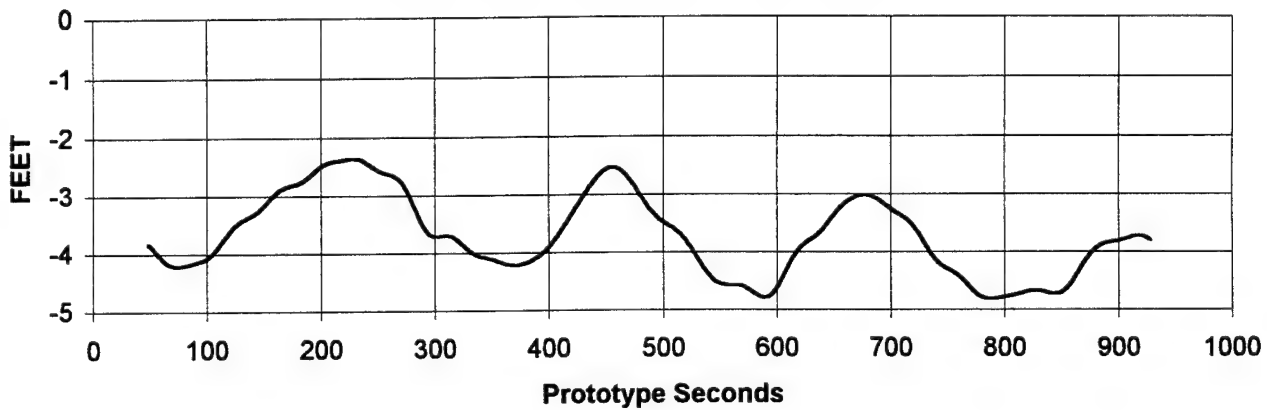


TEST A1105 - PT SURGE

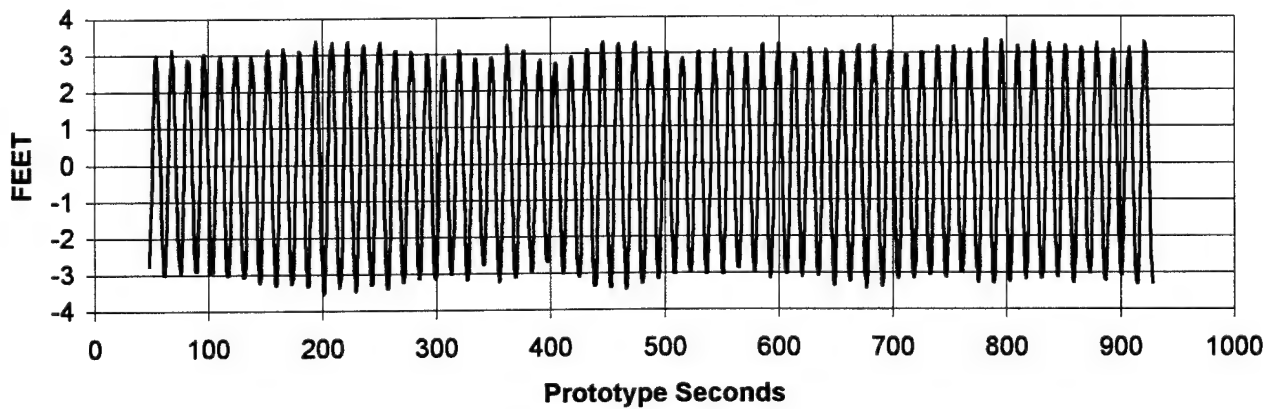
Unfiltered Time History



Filtered Low Frequency Time History

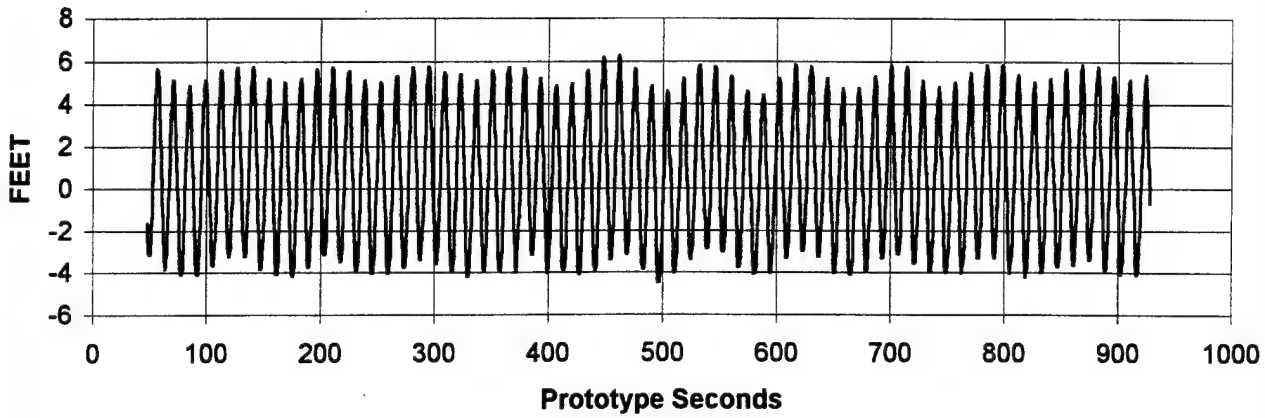


Filtered High Frequency Time History

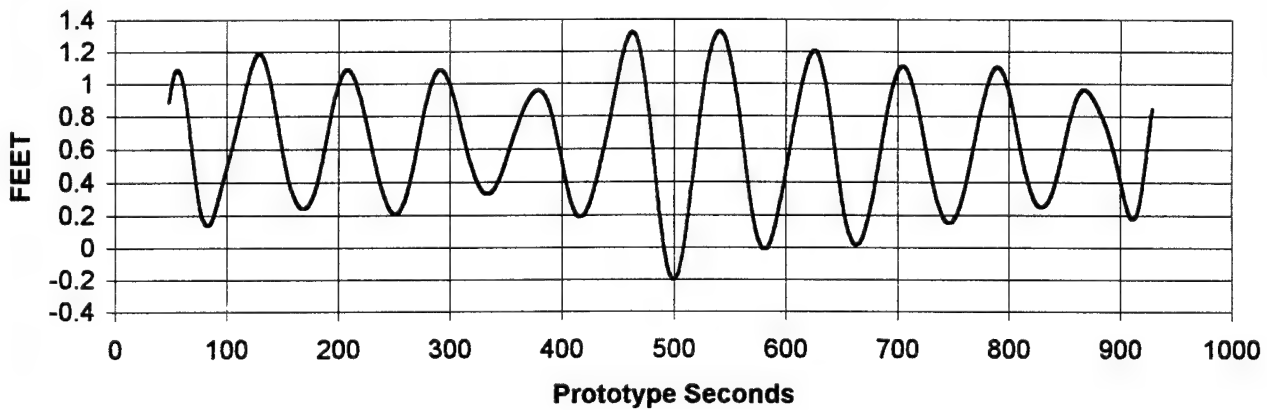


TEST A1105 - PT HEAVE

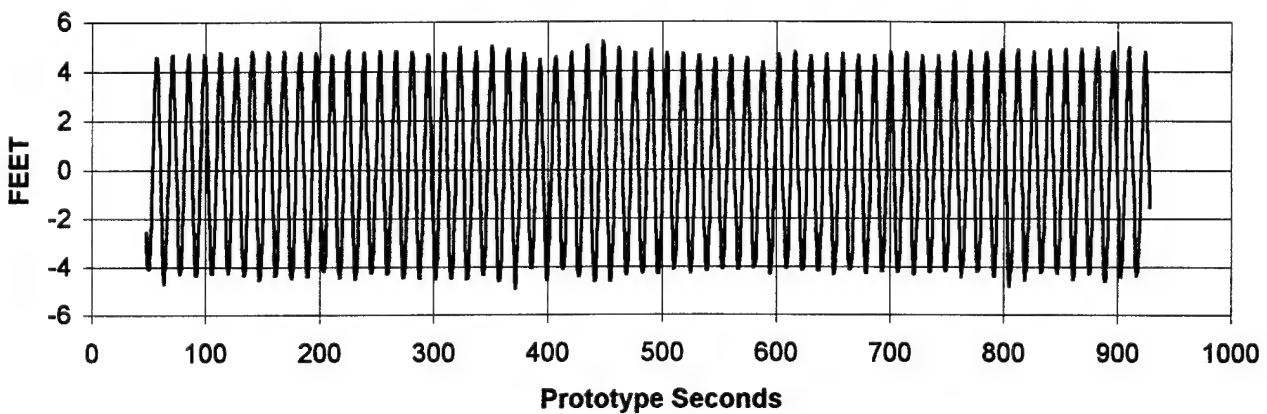
Unfiltered Time History



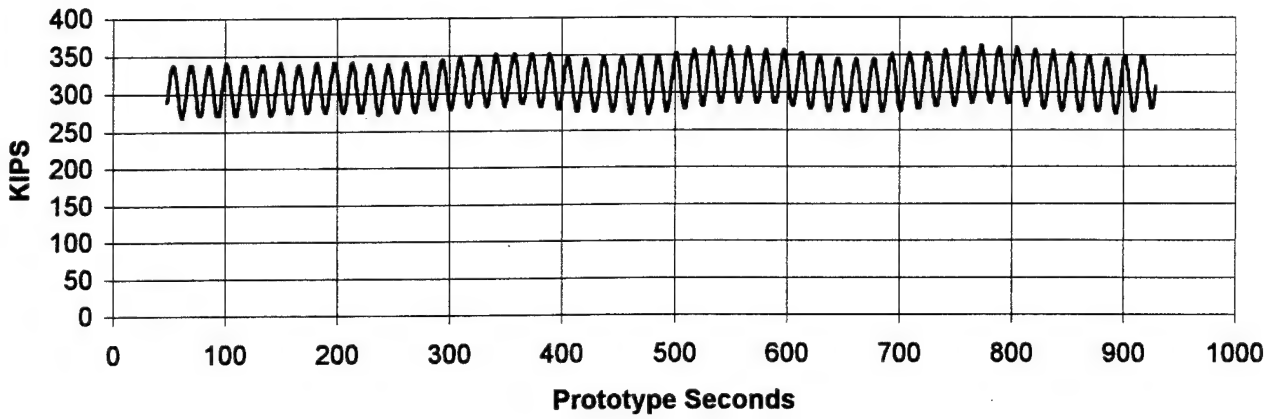
Filtered Low Frequency Time History



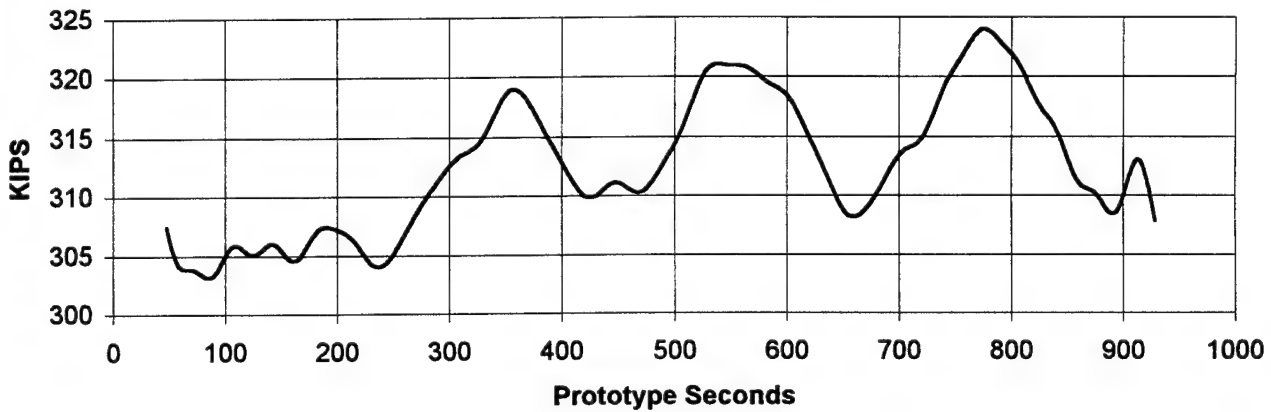
Filtered High Frequency Time History



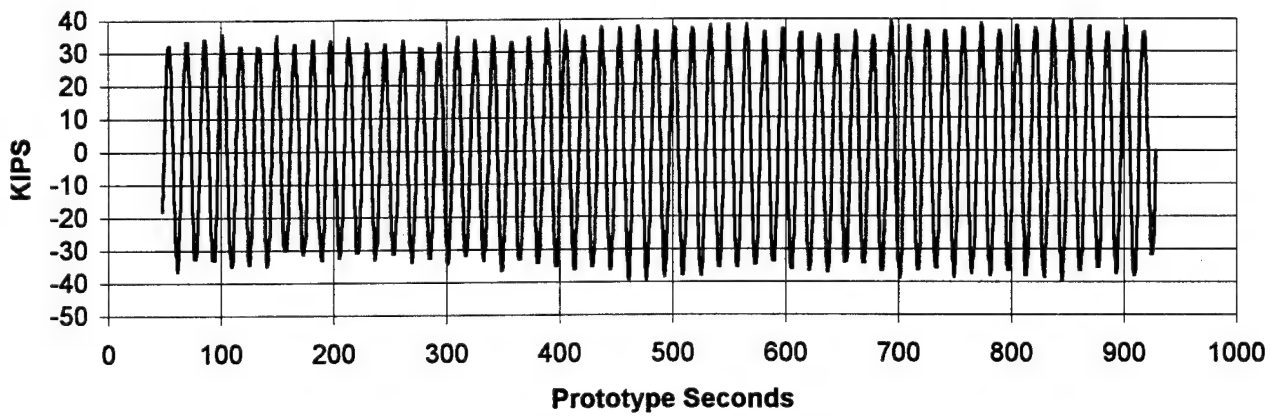
Unfiltered Time History



Filtered Low Frequency Time History

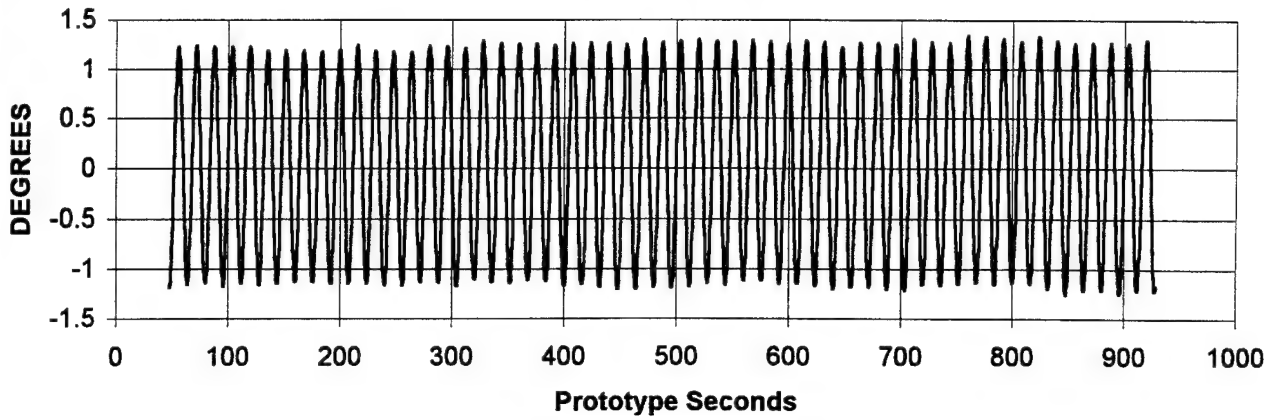


Filtered High Frequency Time History

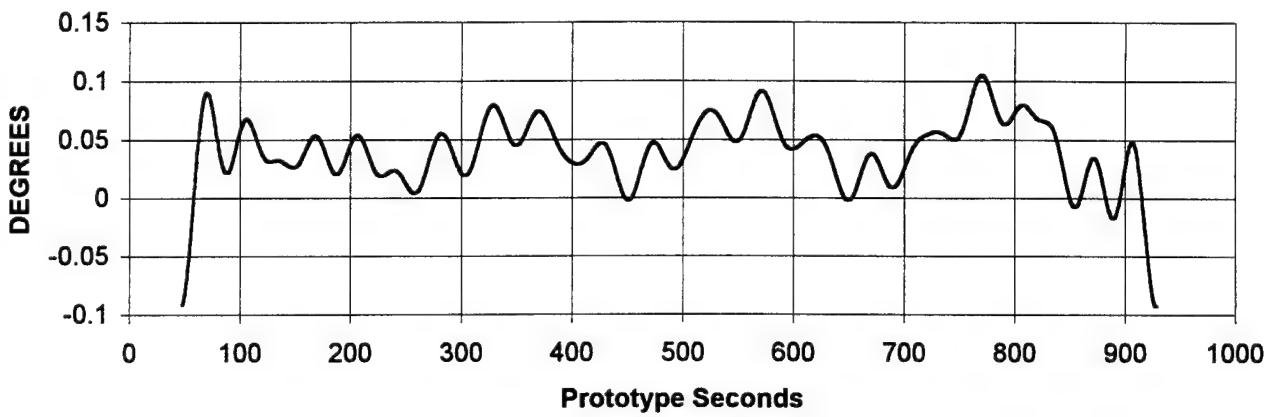


TEST A1106 - PITCH

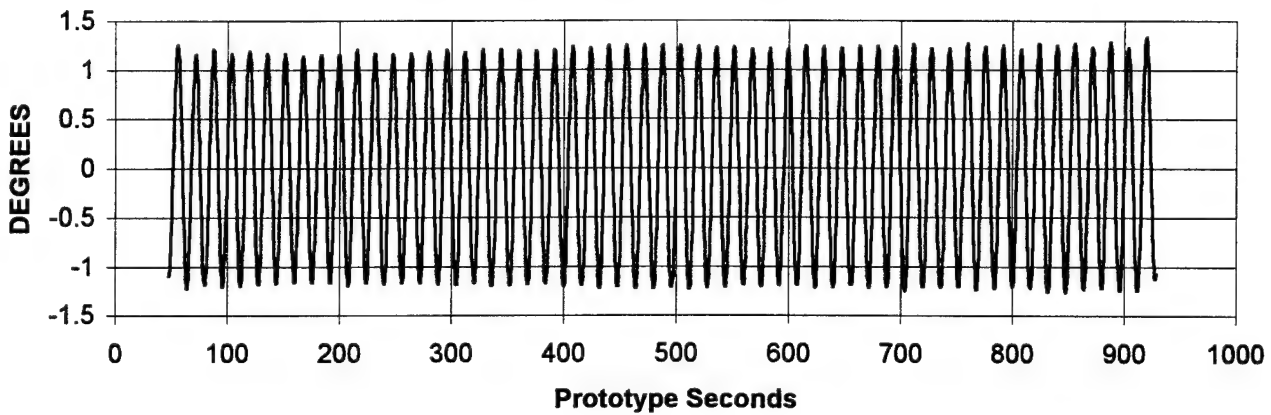
Unfiltered Time History



Filtered Low Frequency Time History

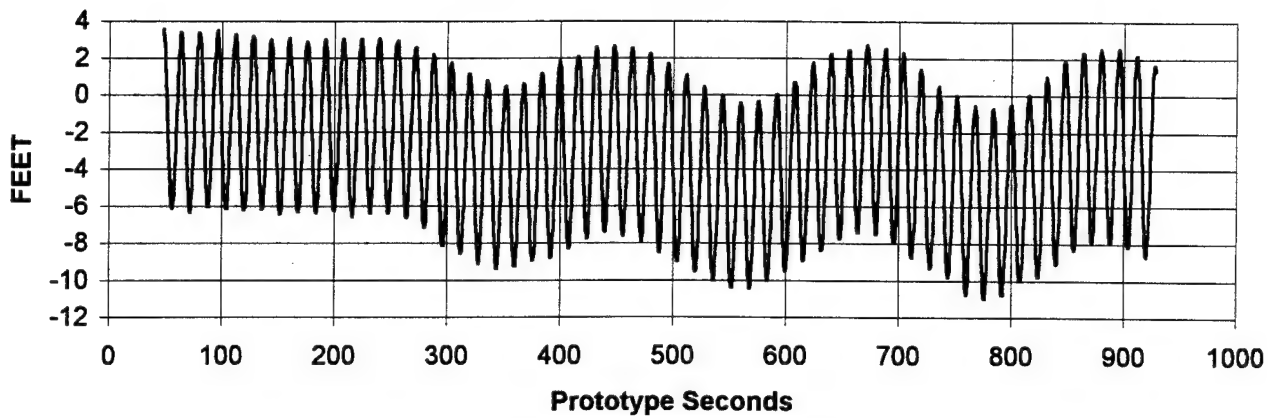


Filtered High Frequency Time History

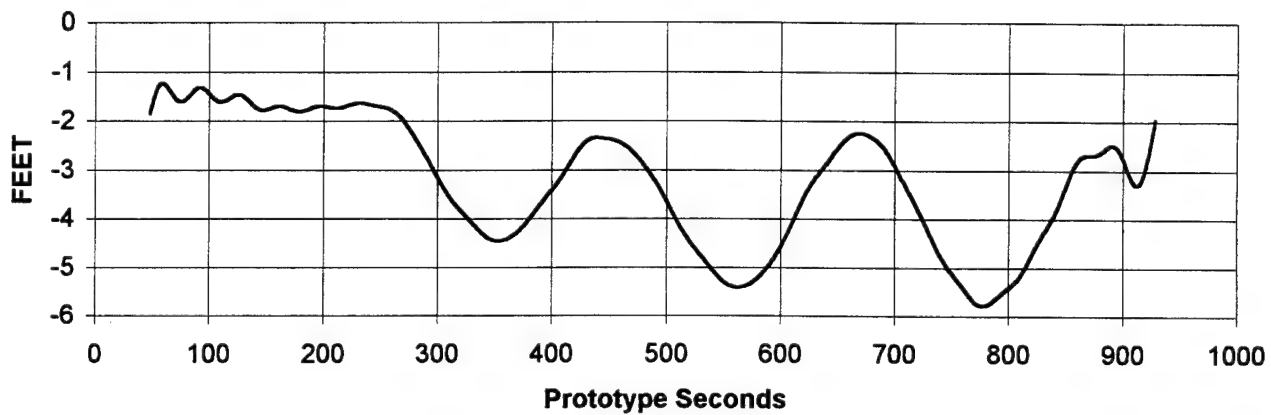


TEST A1106 - PT SURGE

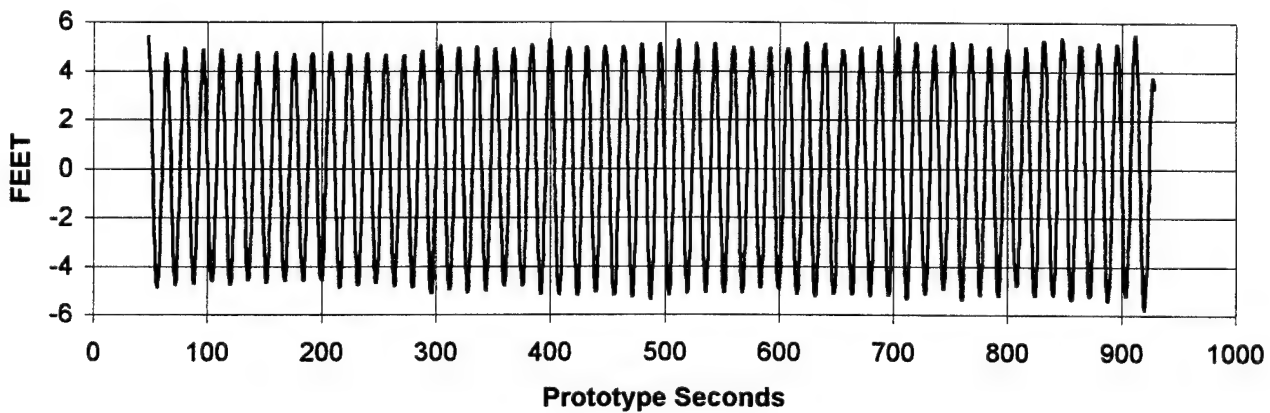
Unfiltered Time History



Filtered Low Frequency Time History

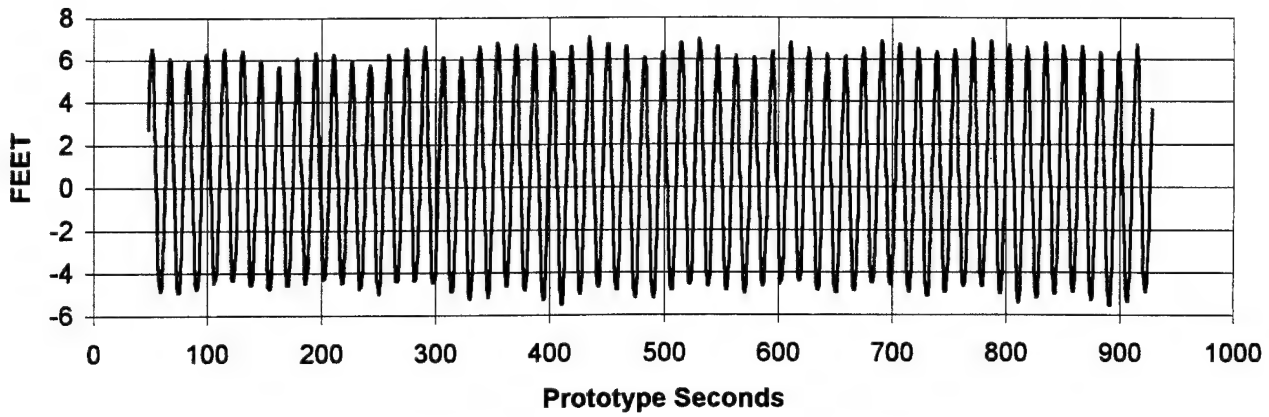


Filtered High Frequency Time History

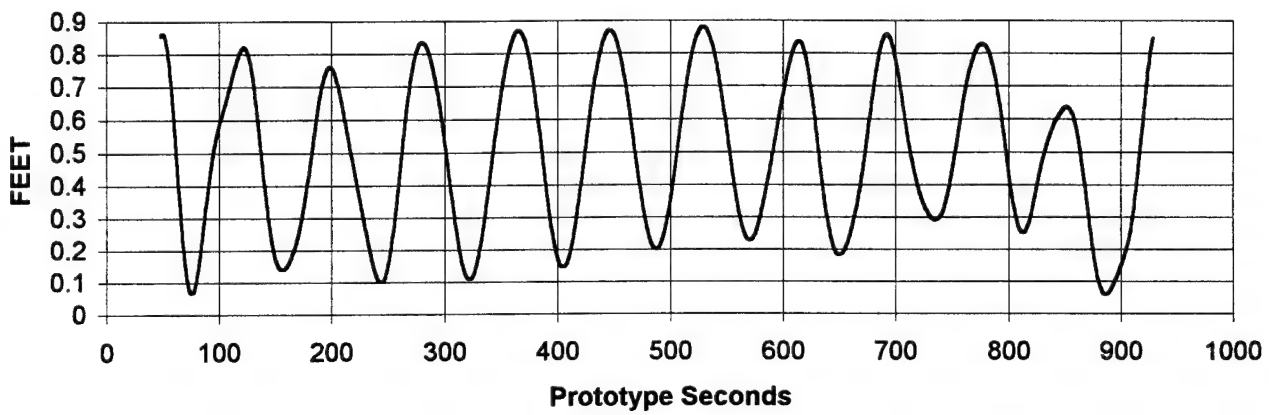


TEST A1106 - PT HEAVE

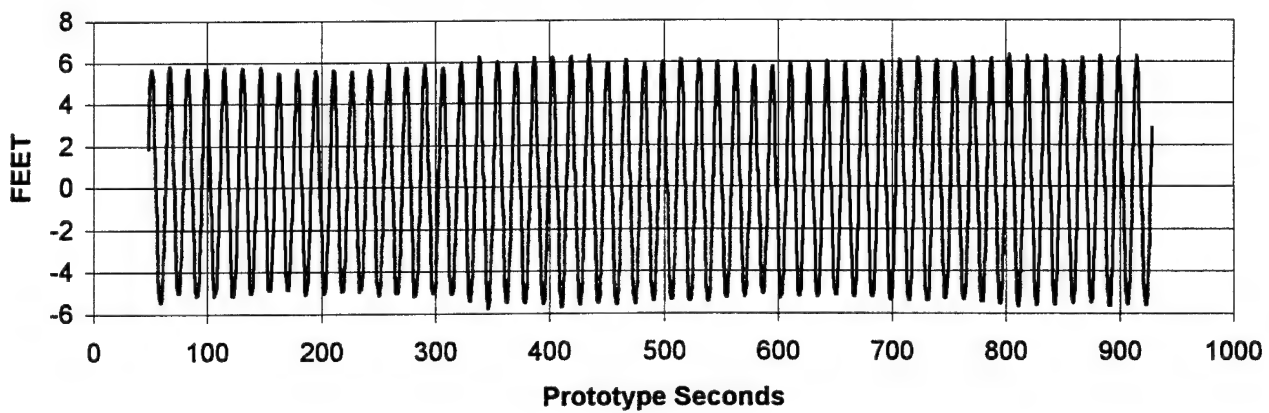
Unfiltered Time History



Filtered Low Frequency Time History

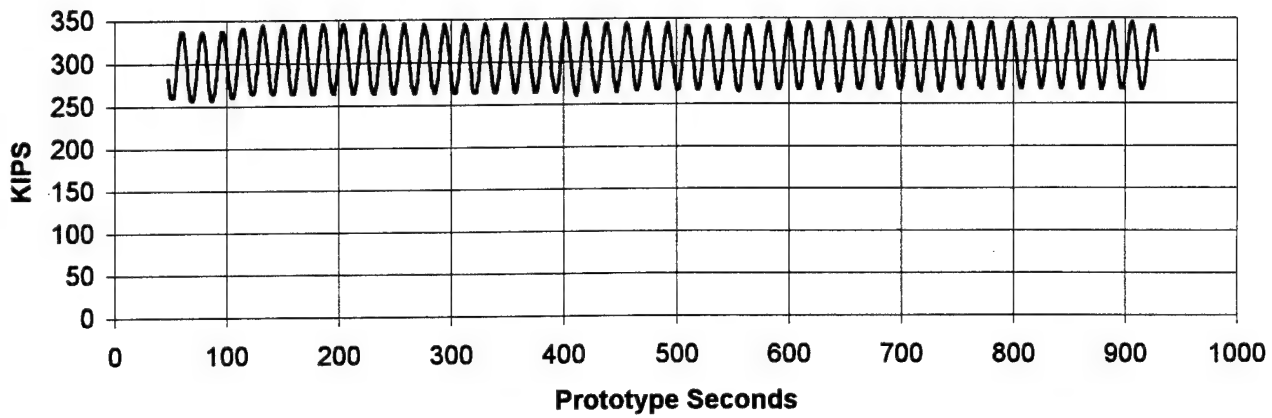


Filtered High Frequency Time History

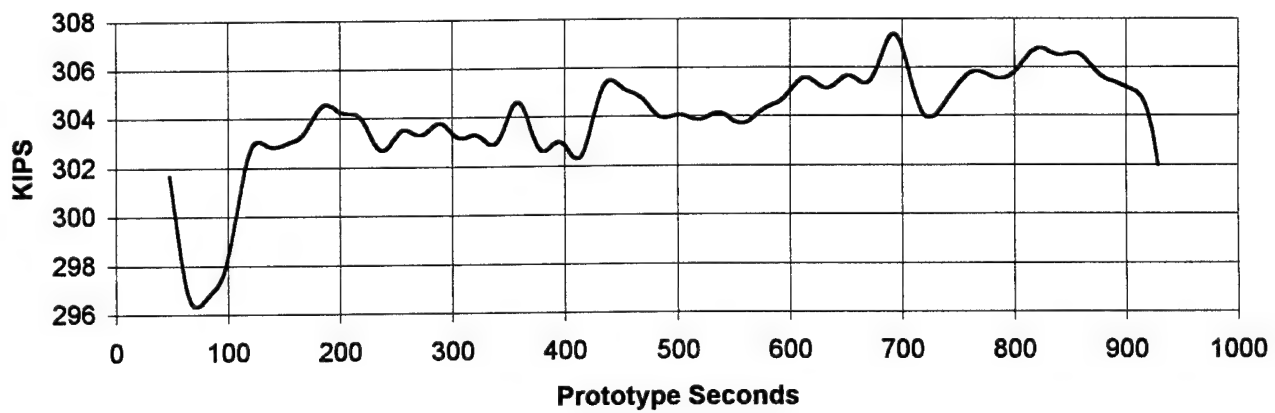


TEST A1107 - ML_1 TENSION

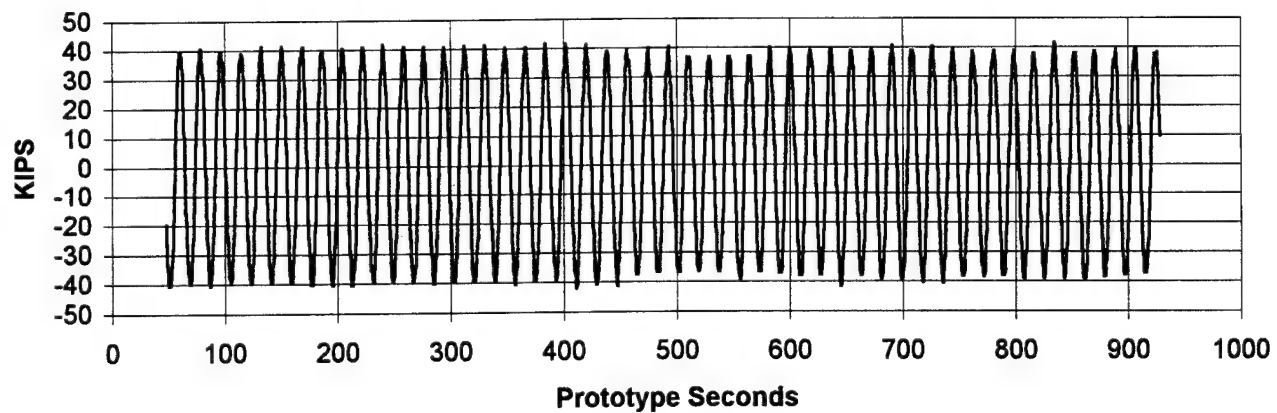
Unfiltered Time History



Filtered Low Frequency Time History

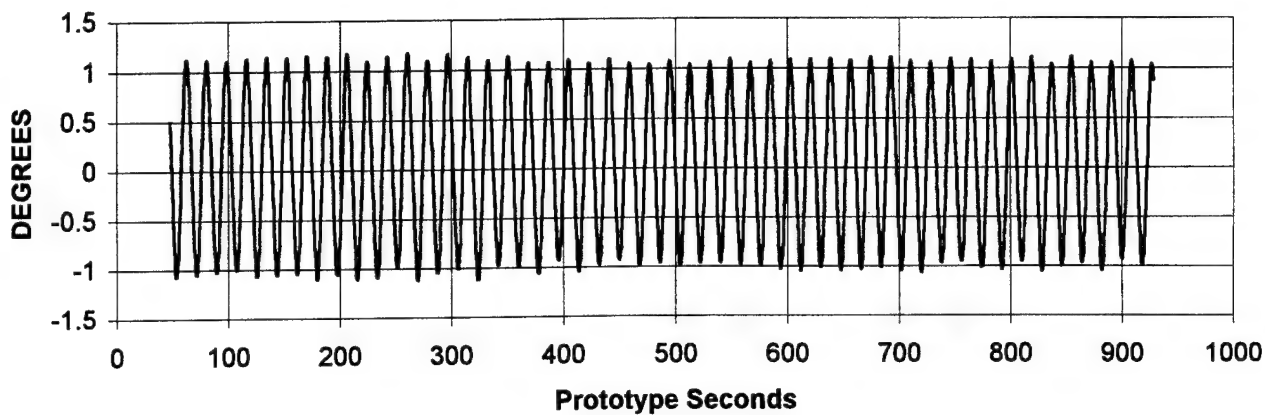


Filtered High Frequency Time History

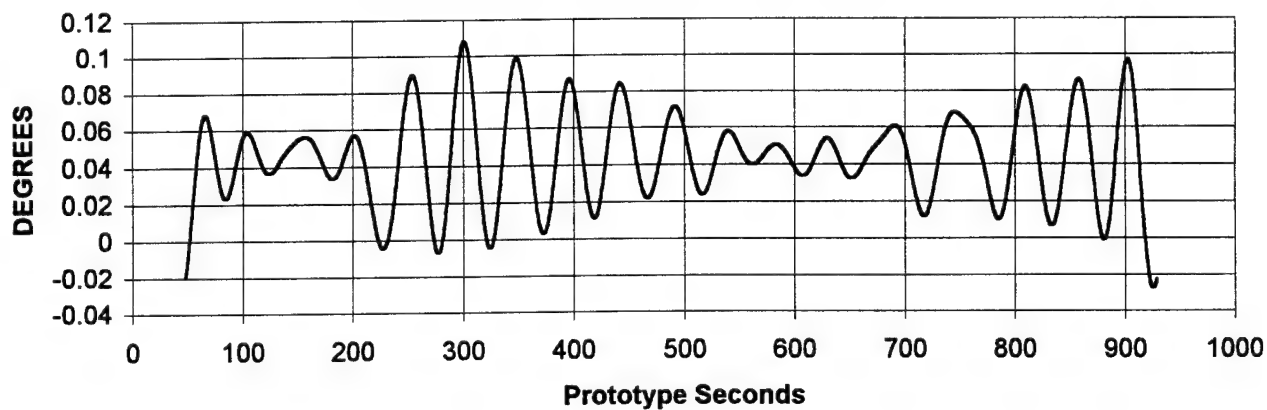


TEST A1107 - PITCH

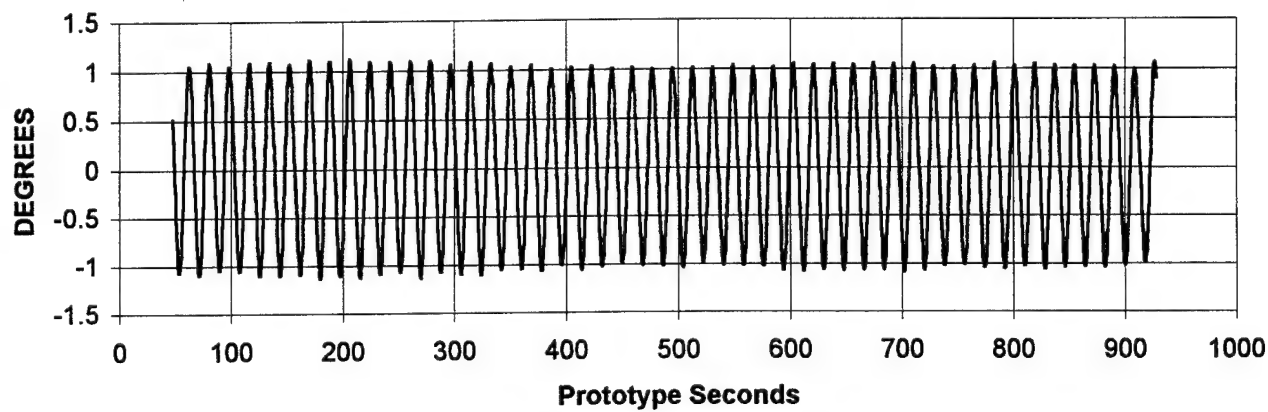
Unfiltered Time History



Filtered Low Frequency Time History

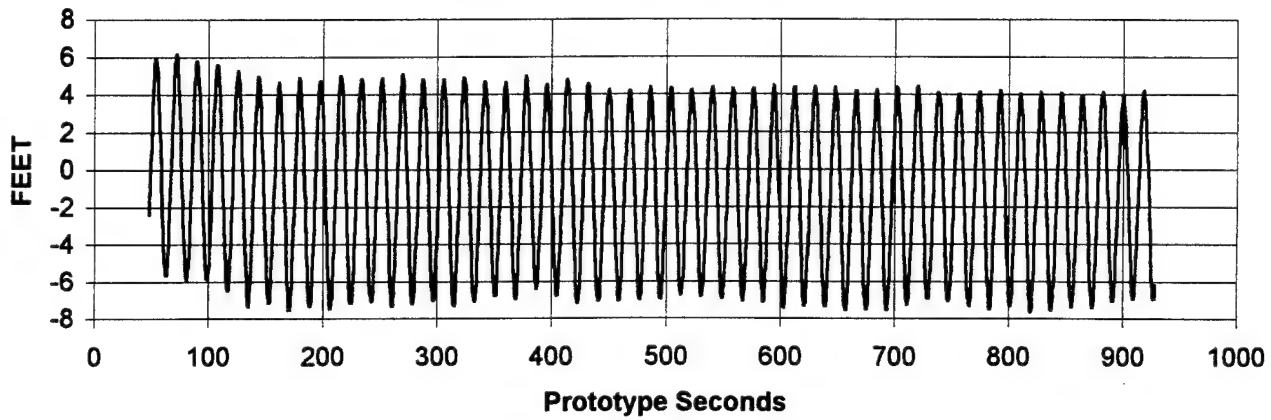


Filtered High Frequency Time History

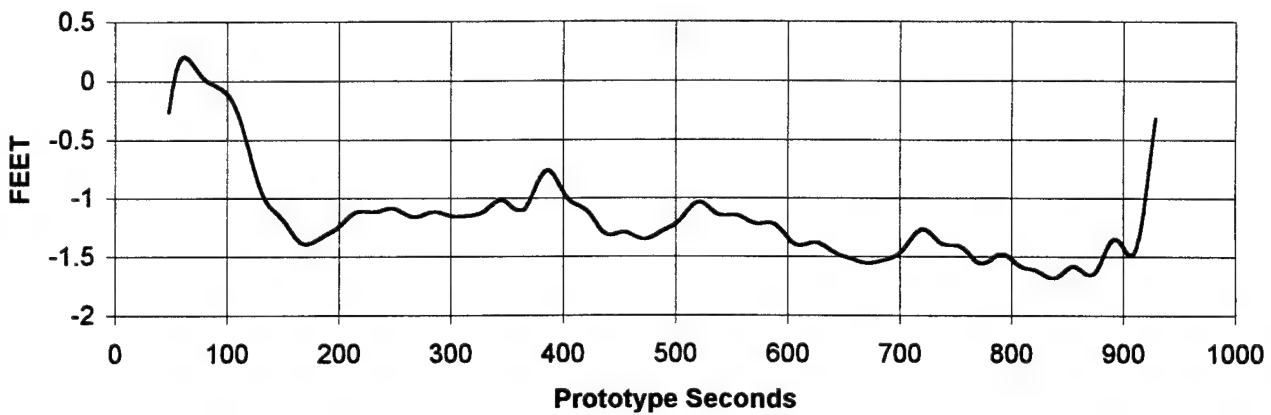


TEST A1107 - PT SURGE

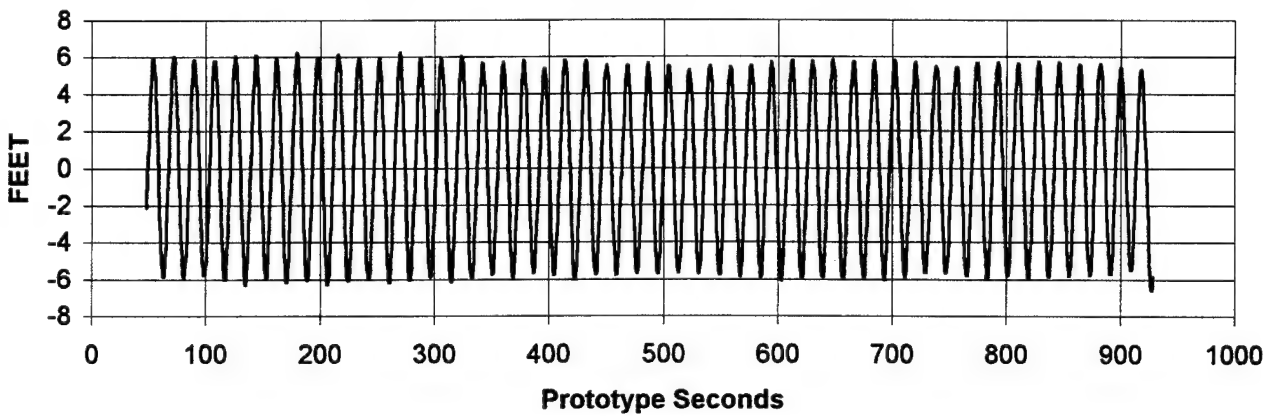
Unfiltered Time History



Filtered Low Frequency Time History

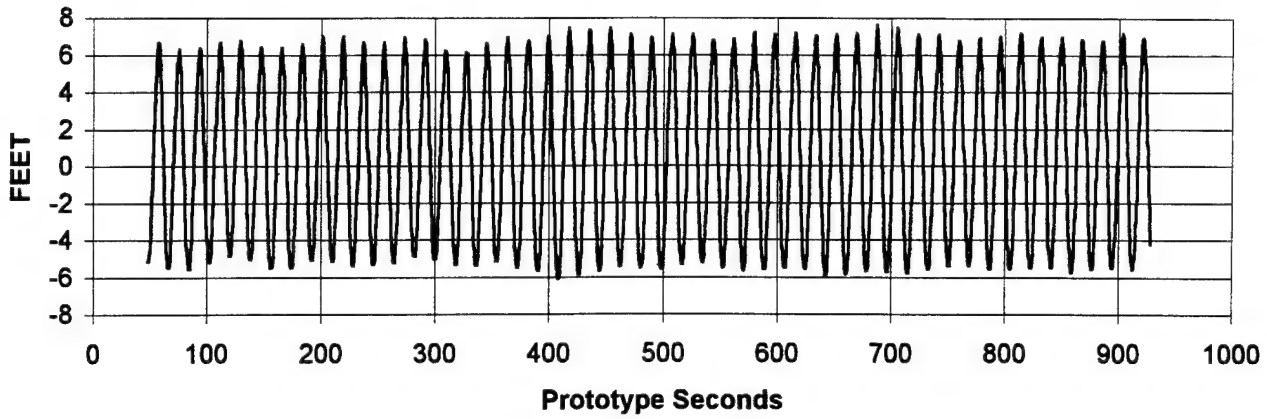


Filtered High Frequency Time History

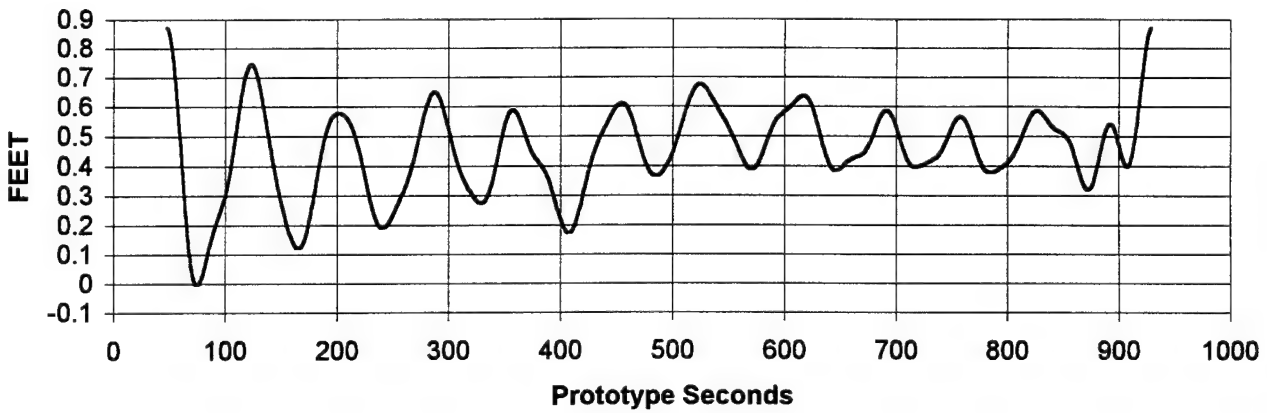


TEST A1107 - PT HEAVE

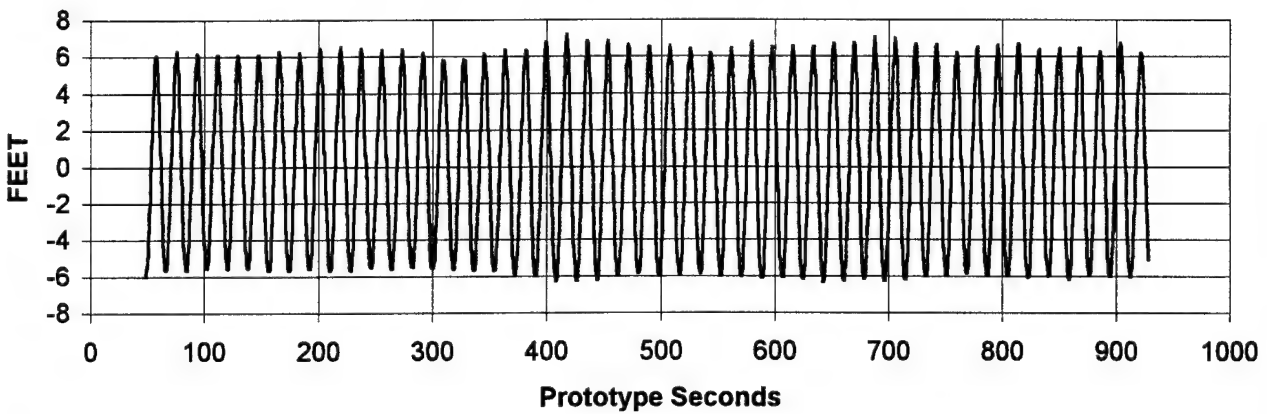
Unfiltered Time History



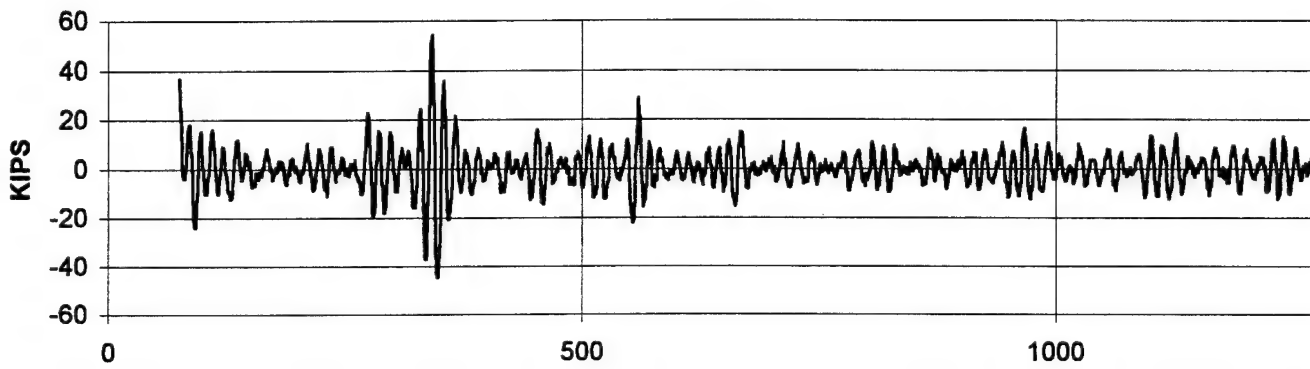
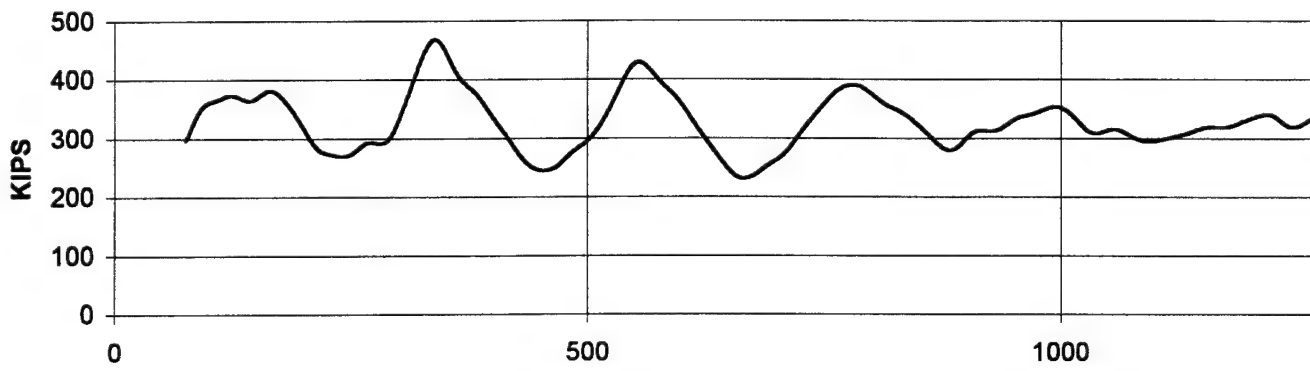
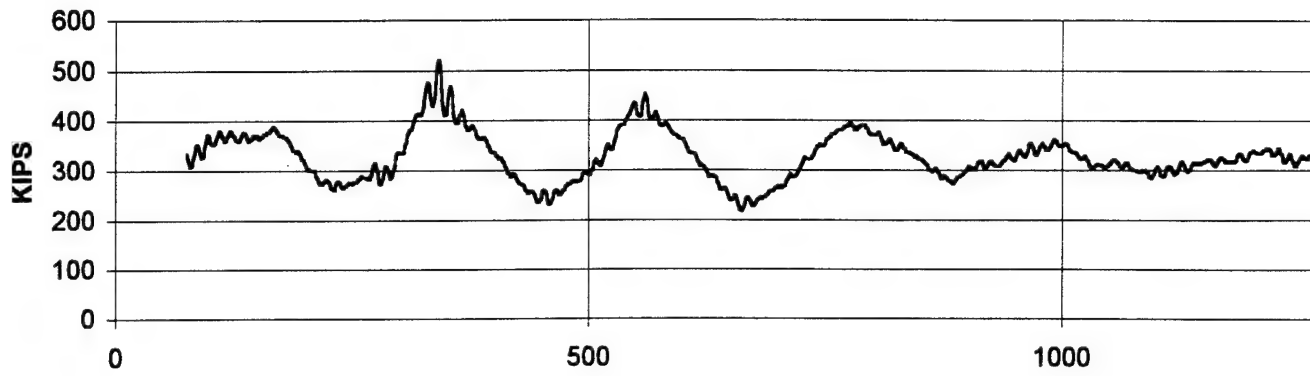
Filtered Low Frequency Time History



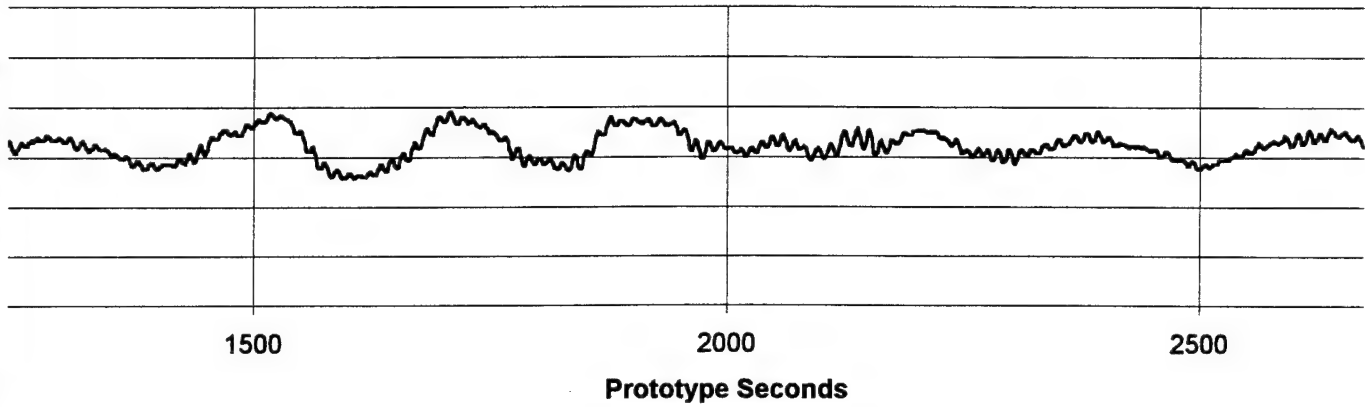
Filtered High Frequency Time History



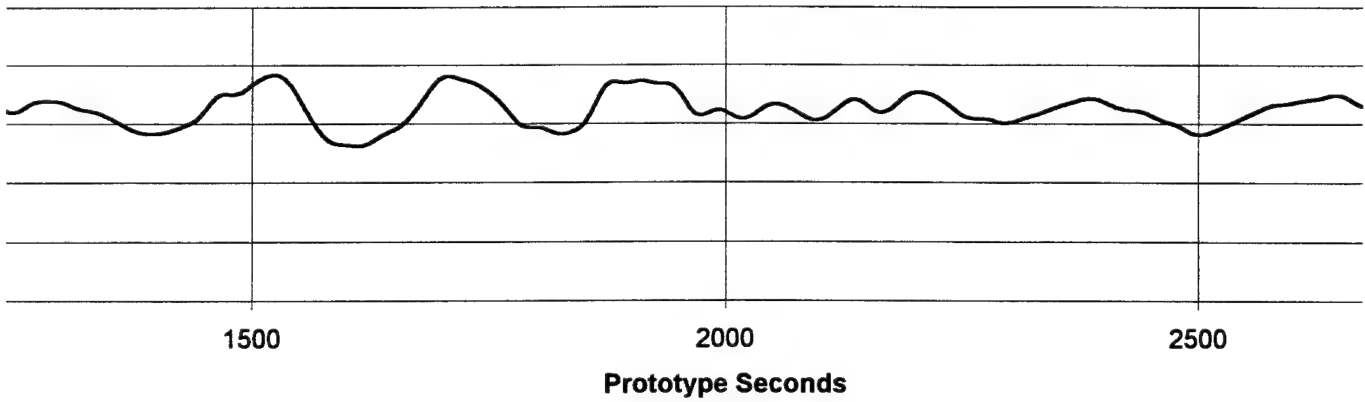
TEST A1108 - ML_1 TENSION



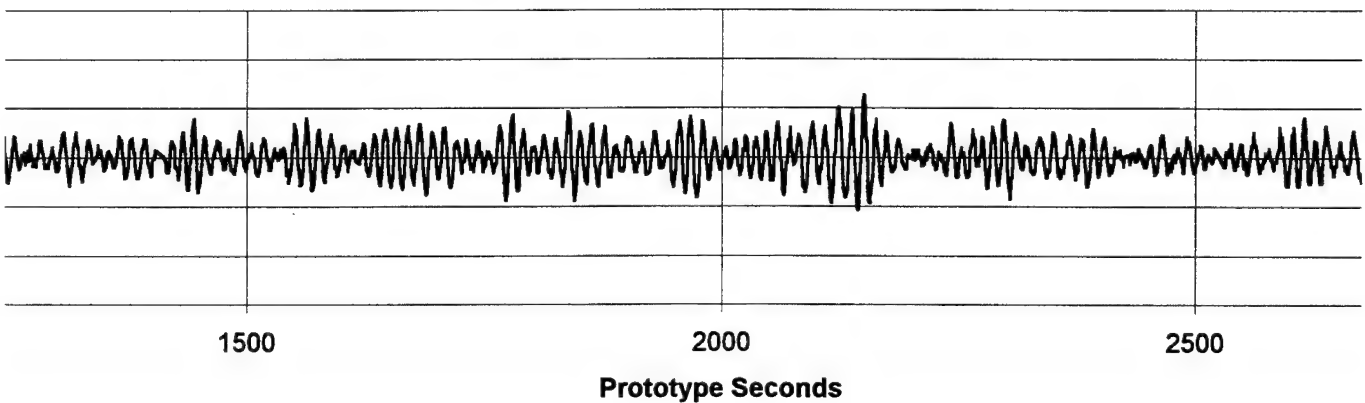
Unfiltered Time History



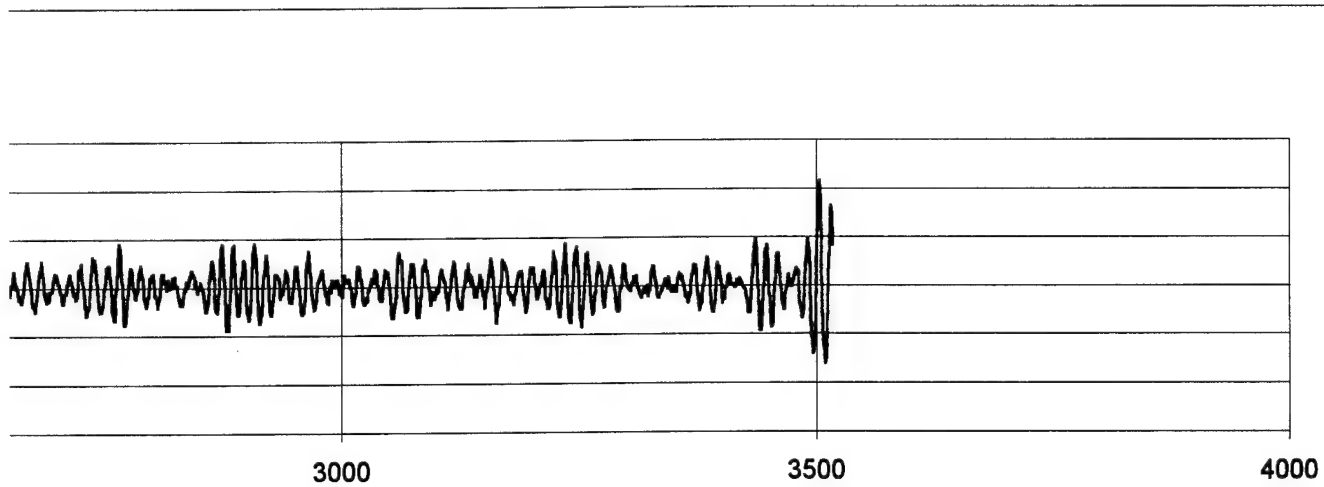
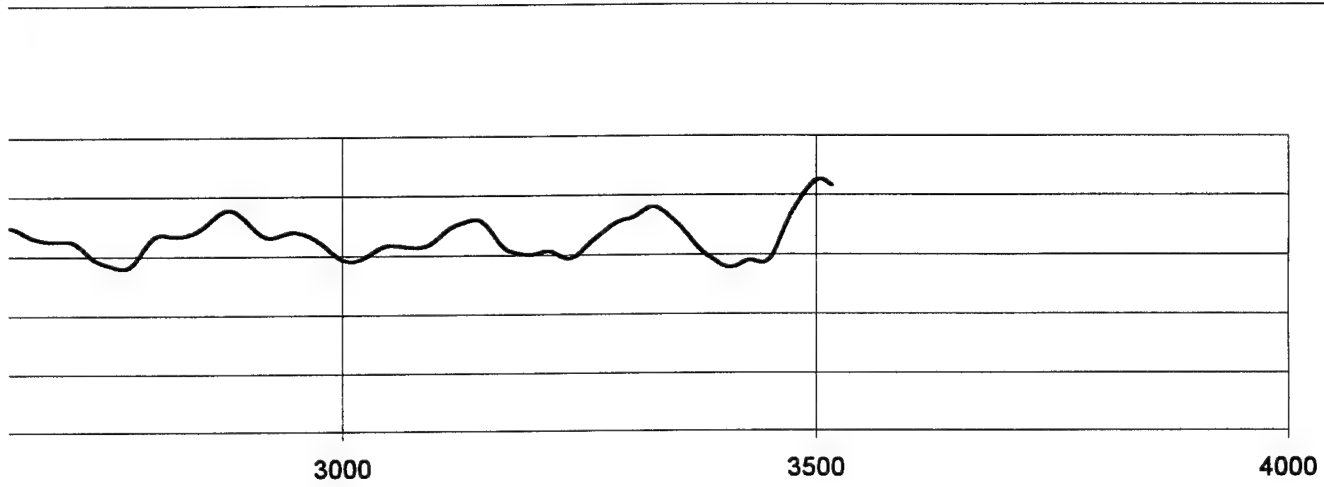
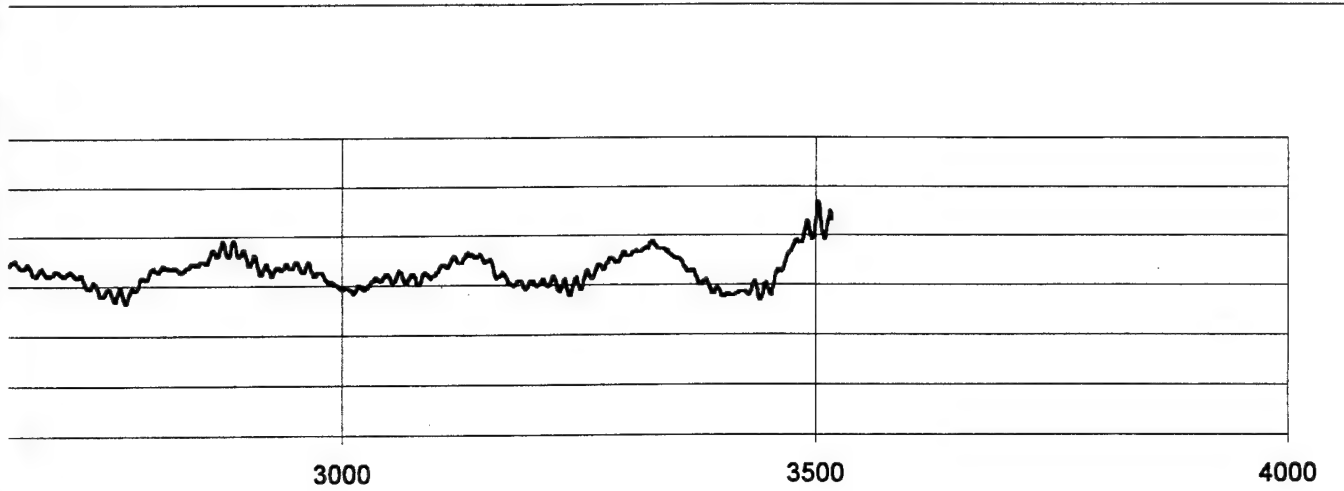
Filtered Low Frequency Time History



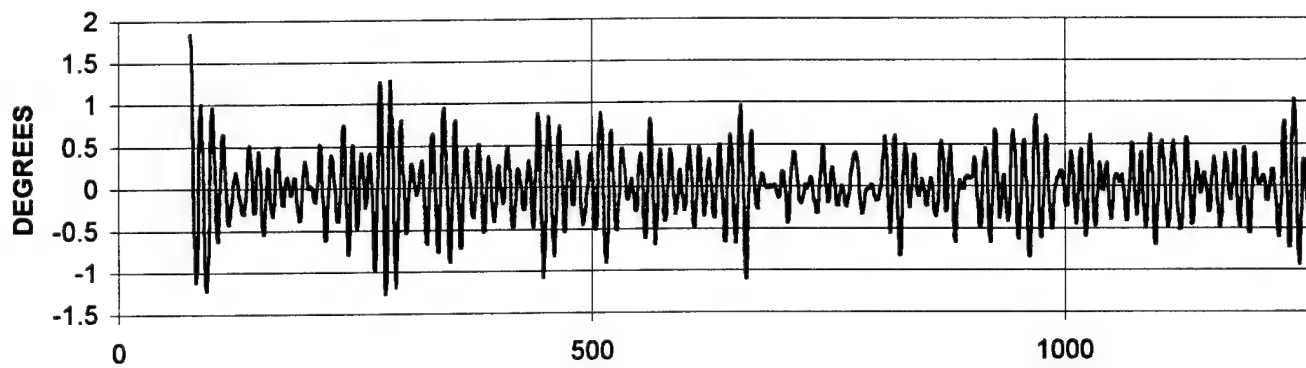
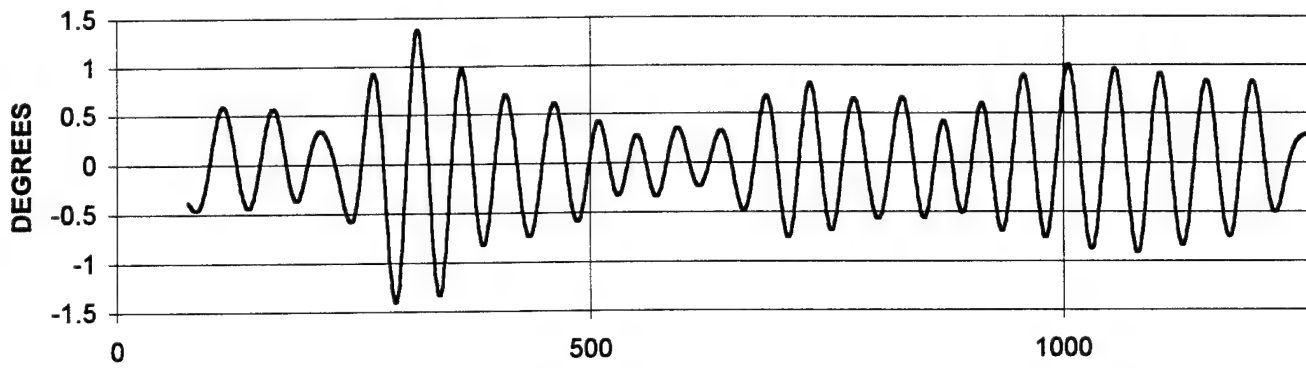
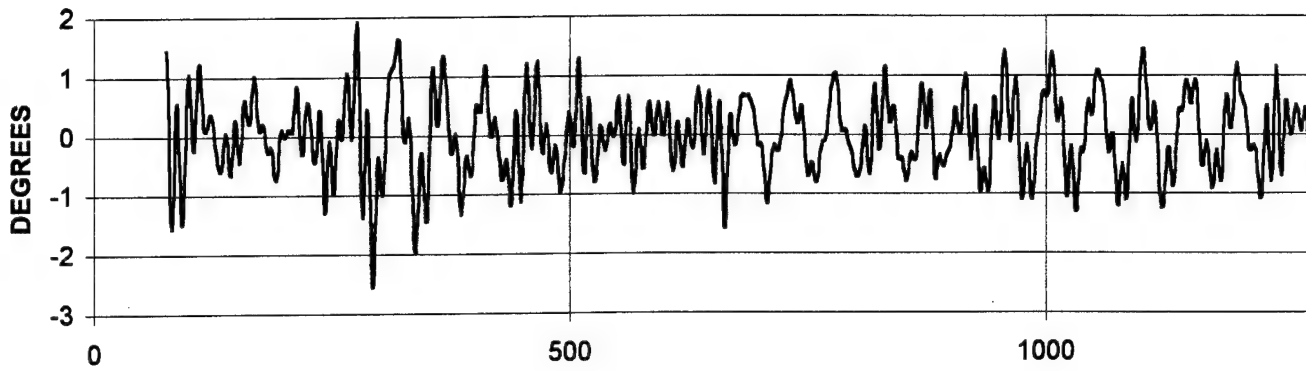
Filtered High Frequency Time History



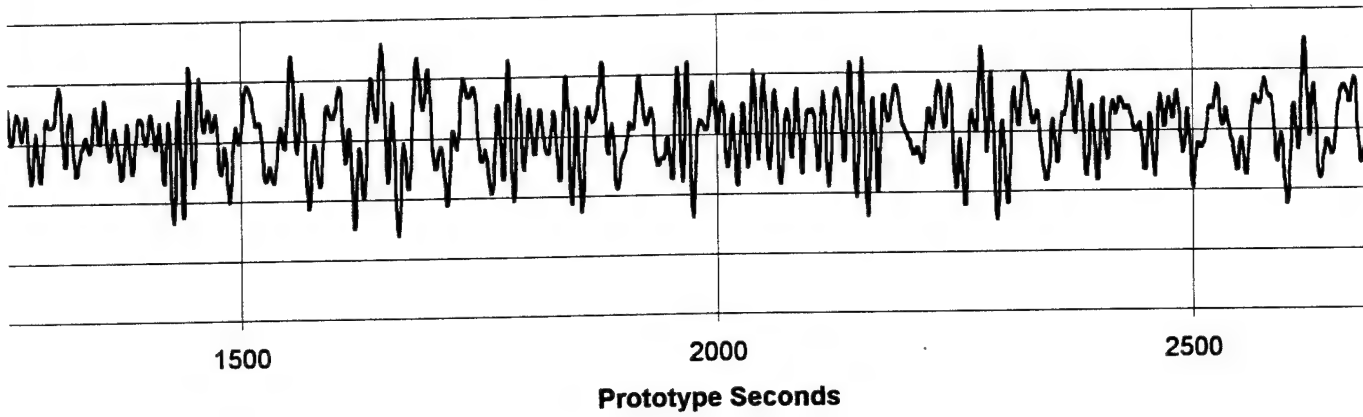
TEST A1108 - ML_1 TENSION



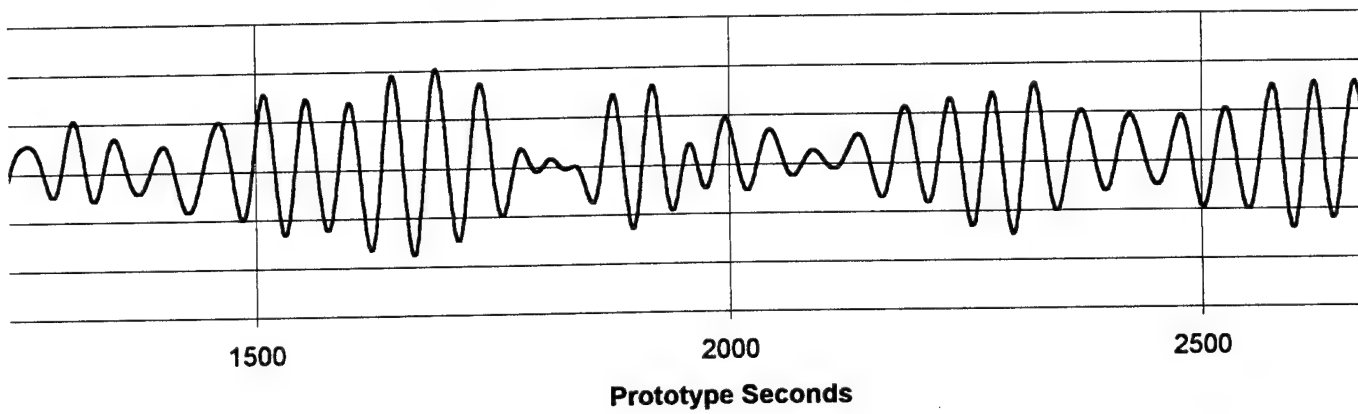
TEST A1108 - PITCH



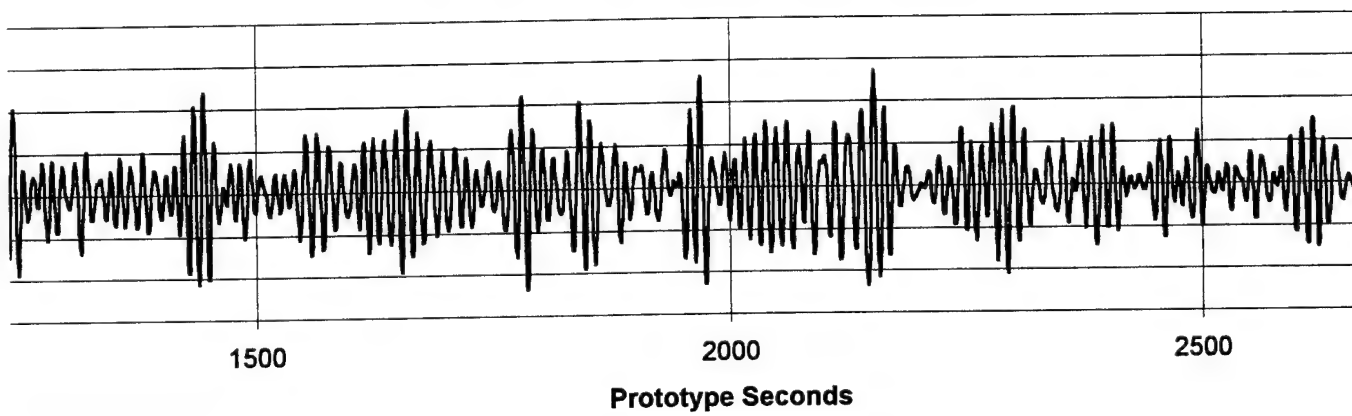
Unfiltered Time History



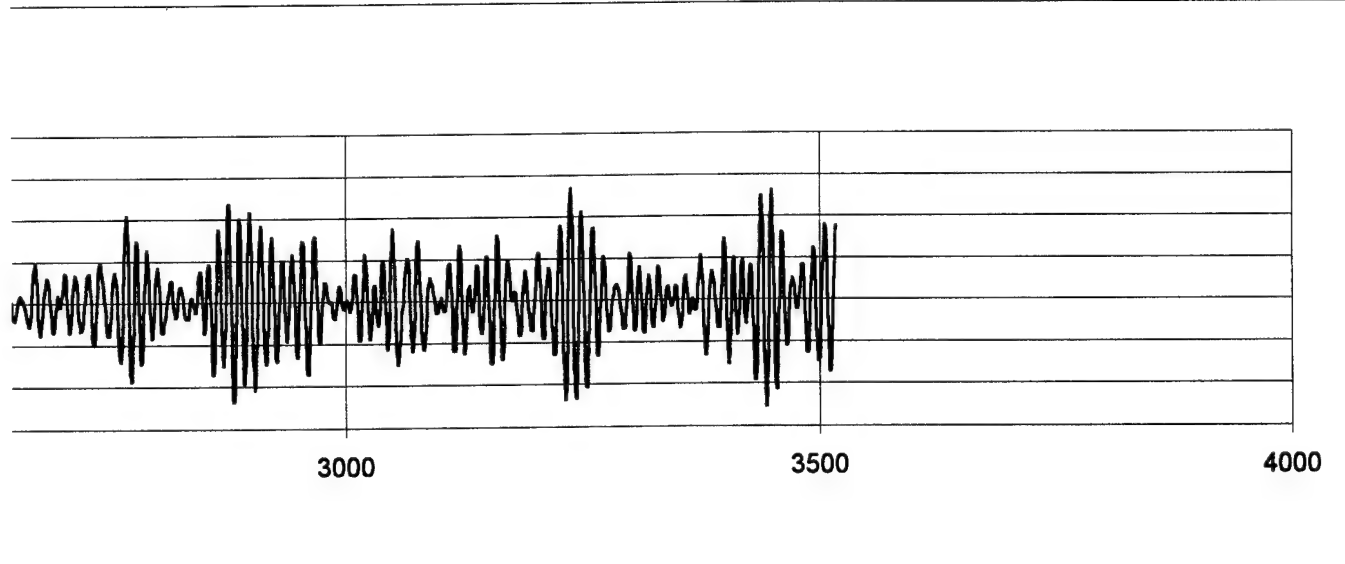
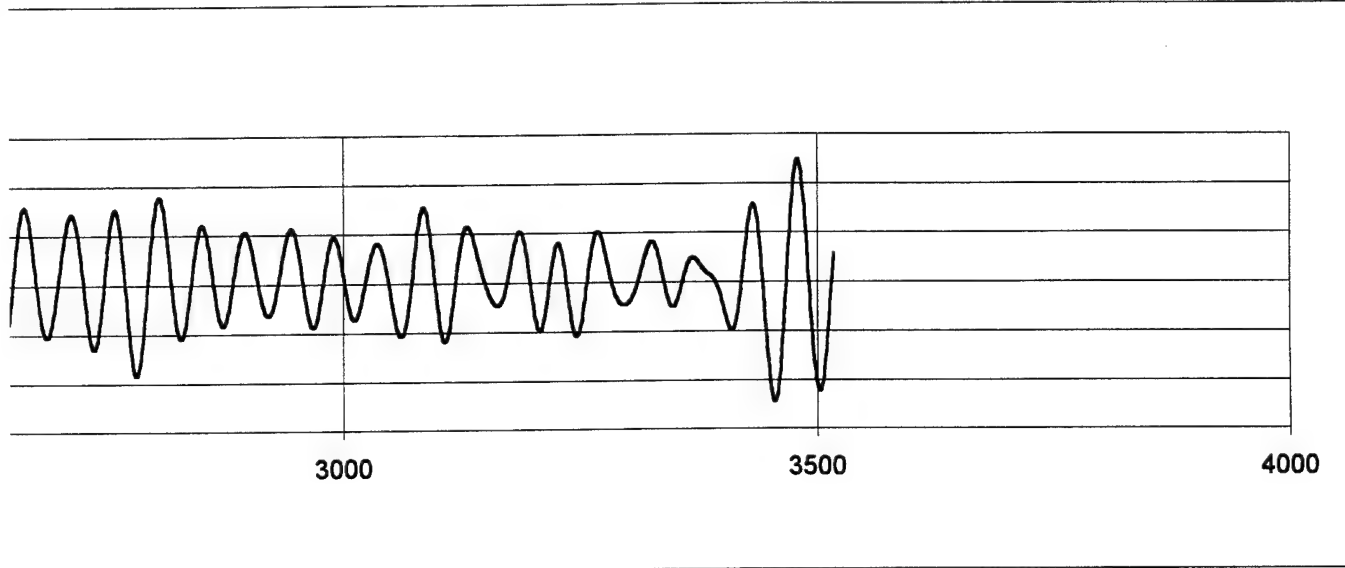
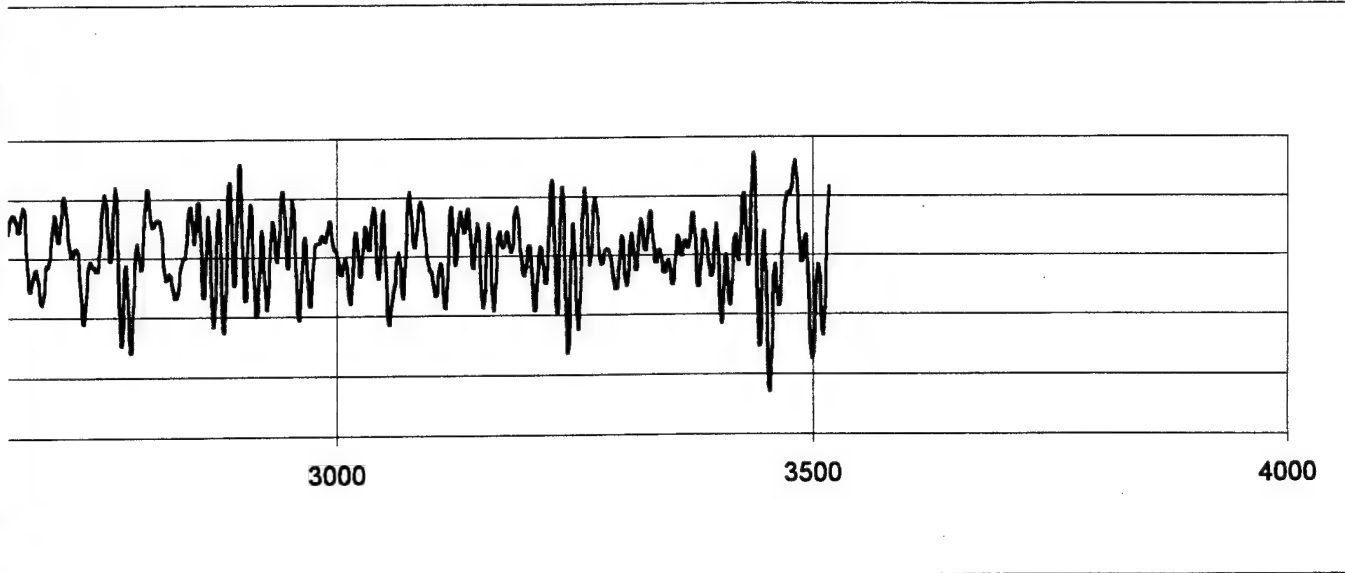
Filtered Low Frequency Time History



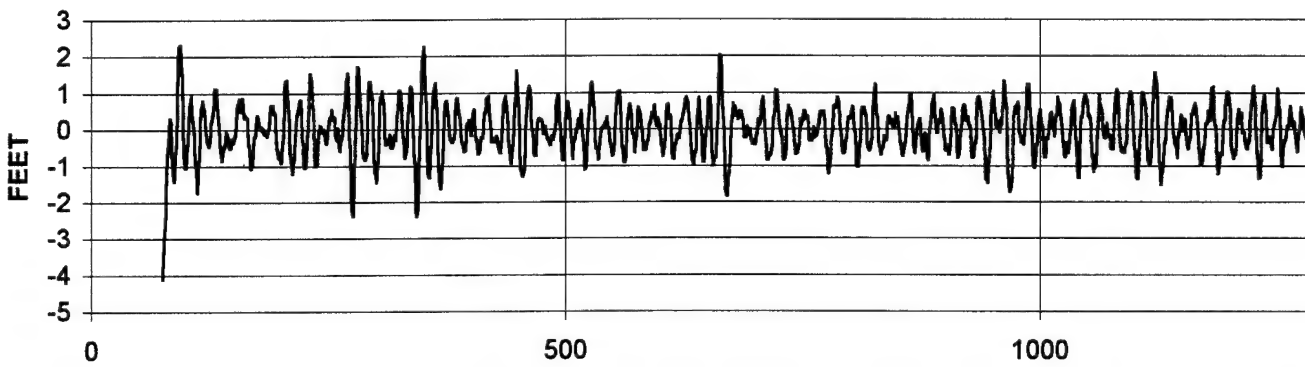
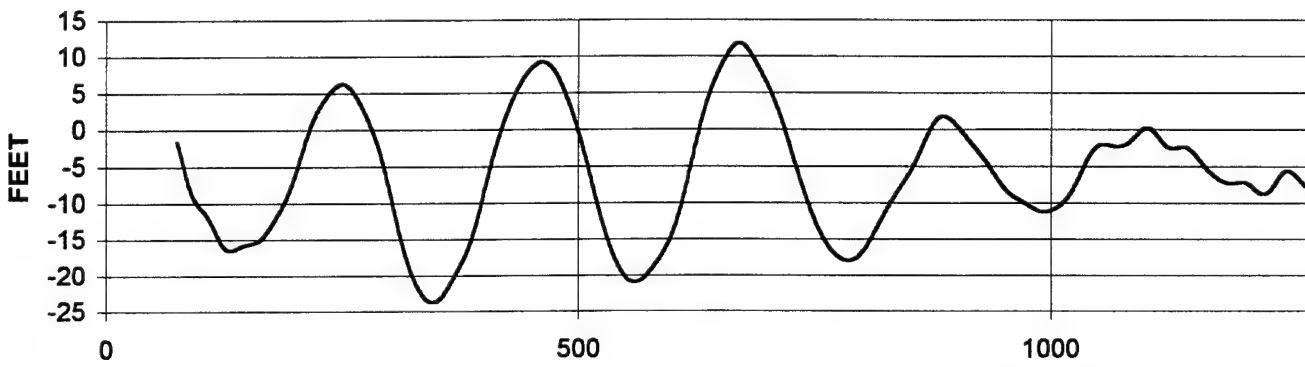
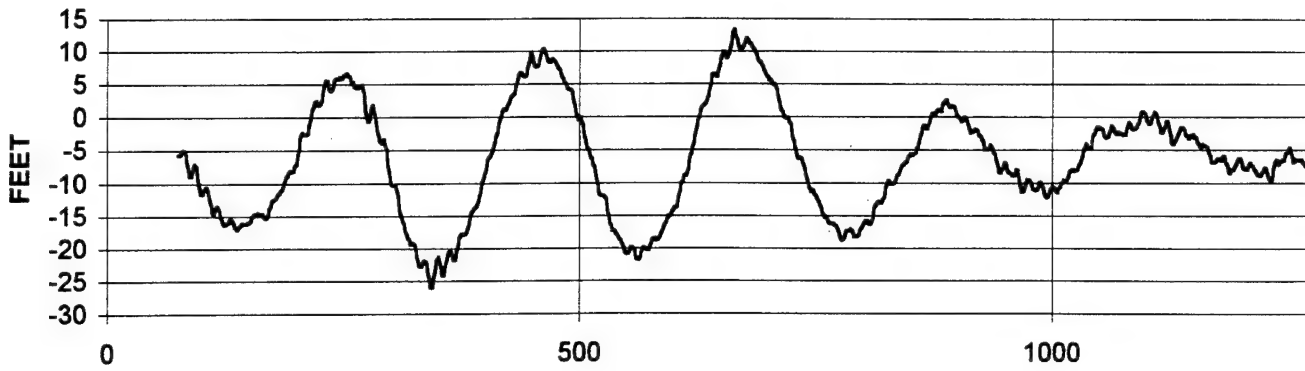
Filtered High Frequency Time History



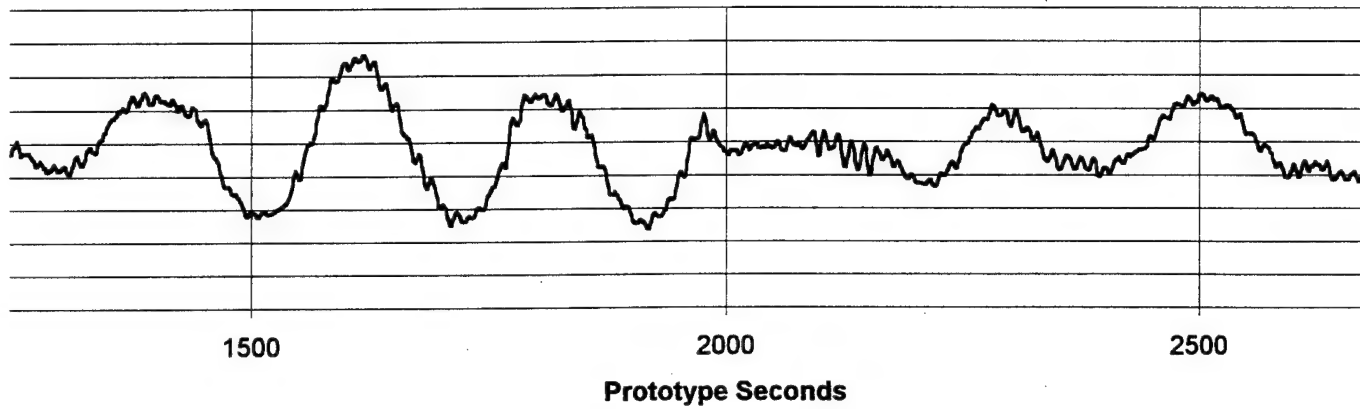
TEST A1108 - PITCH



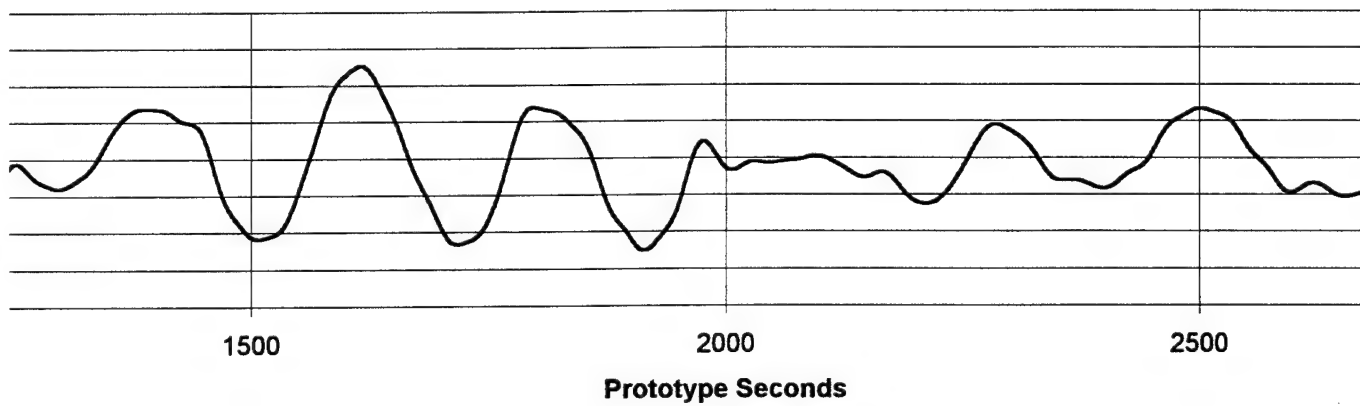
TEST A1108 - PT SURGE



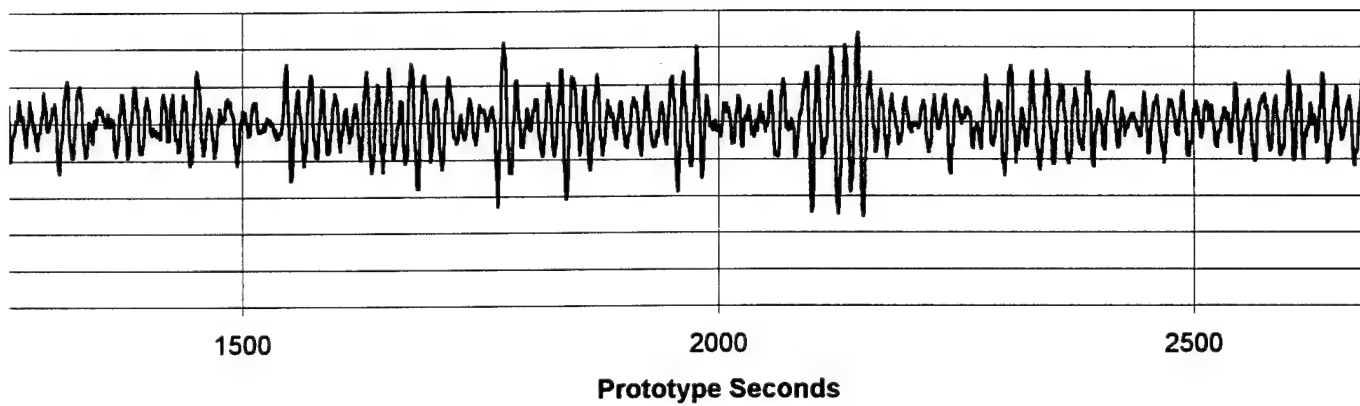
Unfiltered Time History



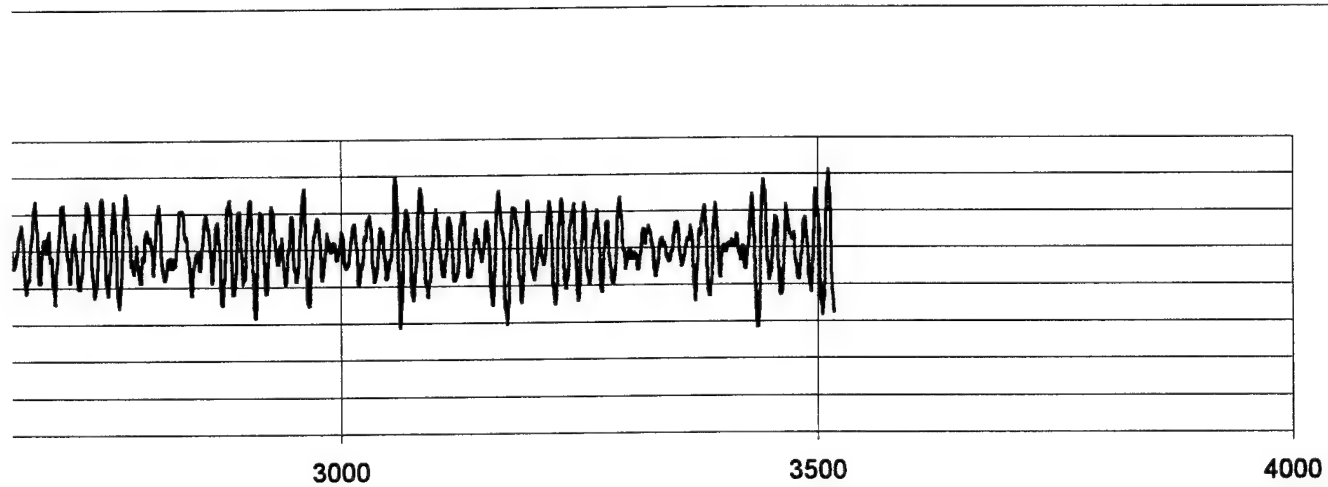
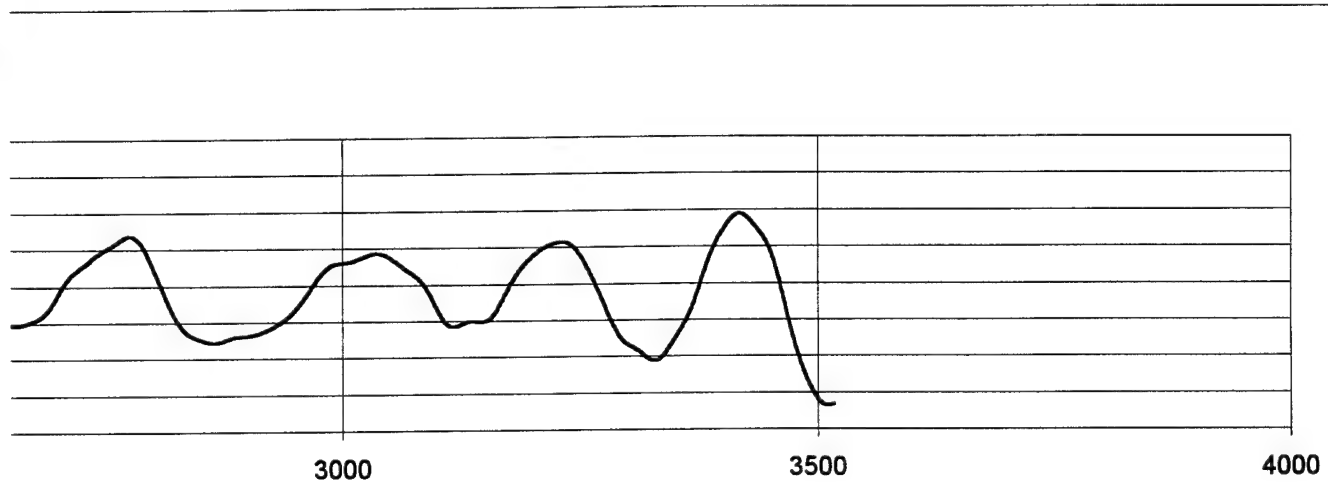
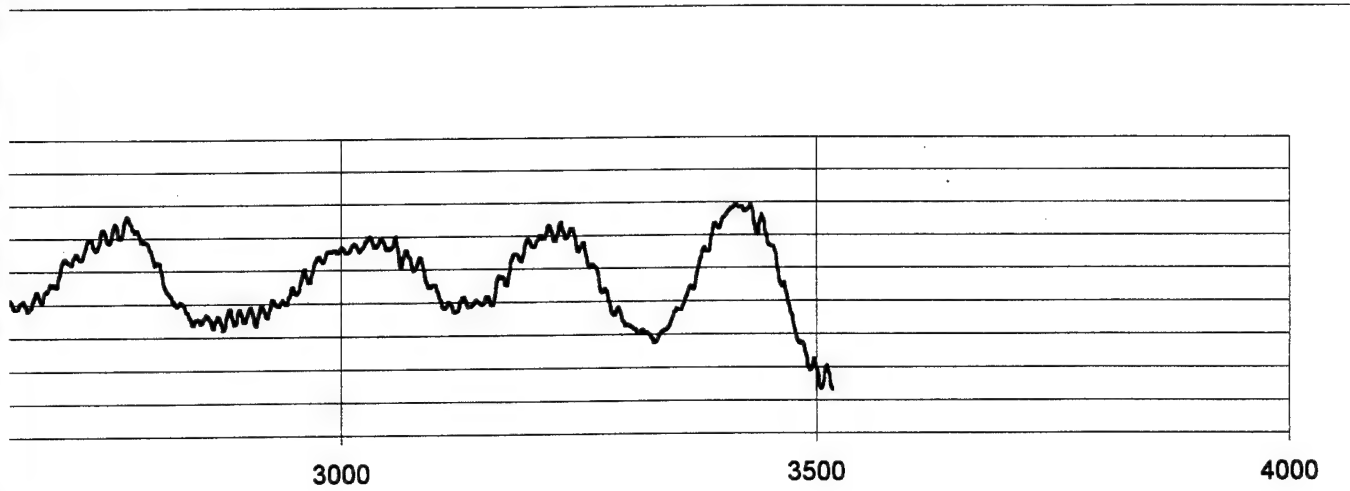
Filtered Low Frequency Time History



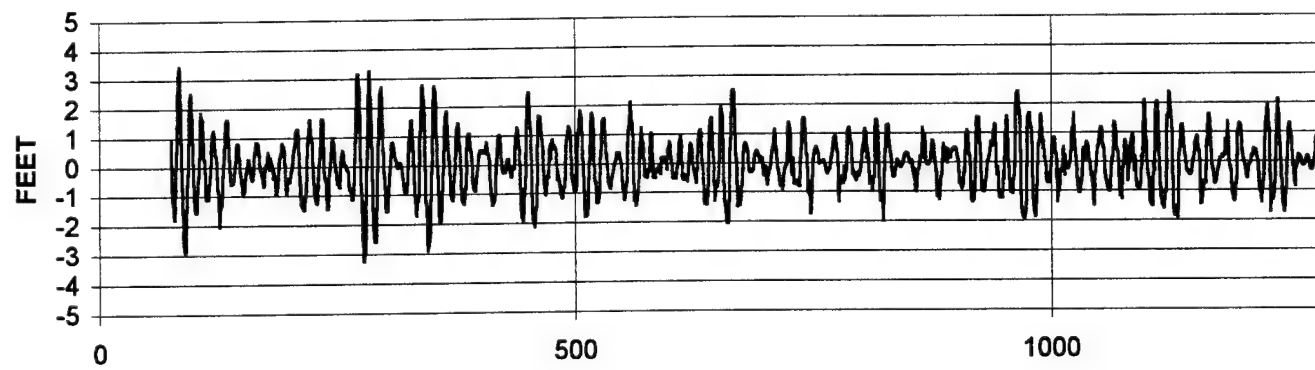
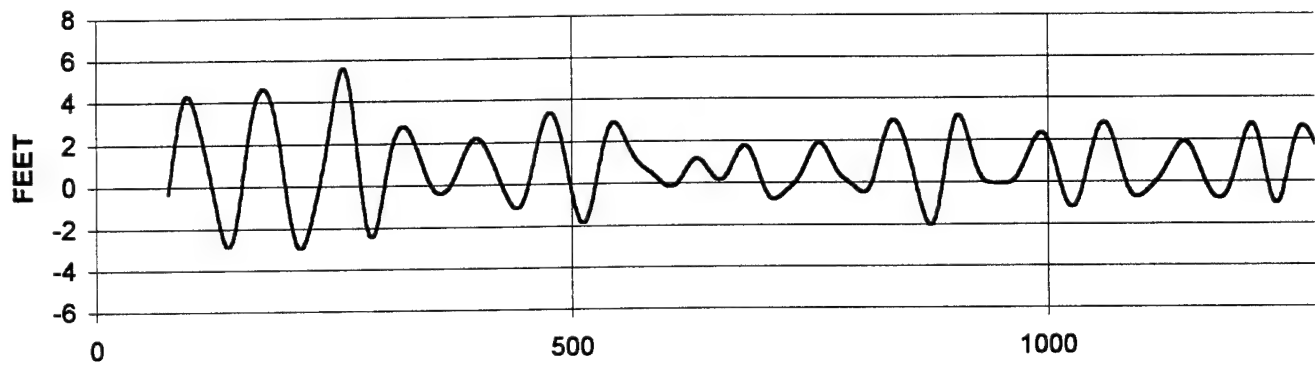
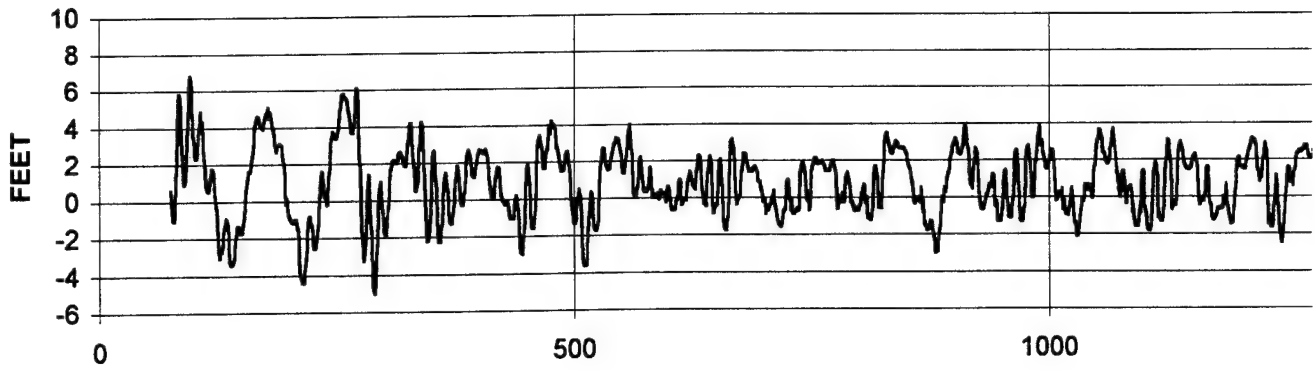
Filtered High Frequency Time History



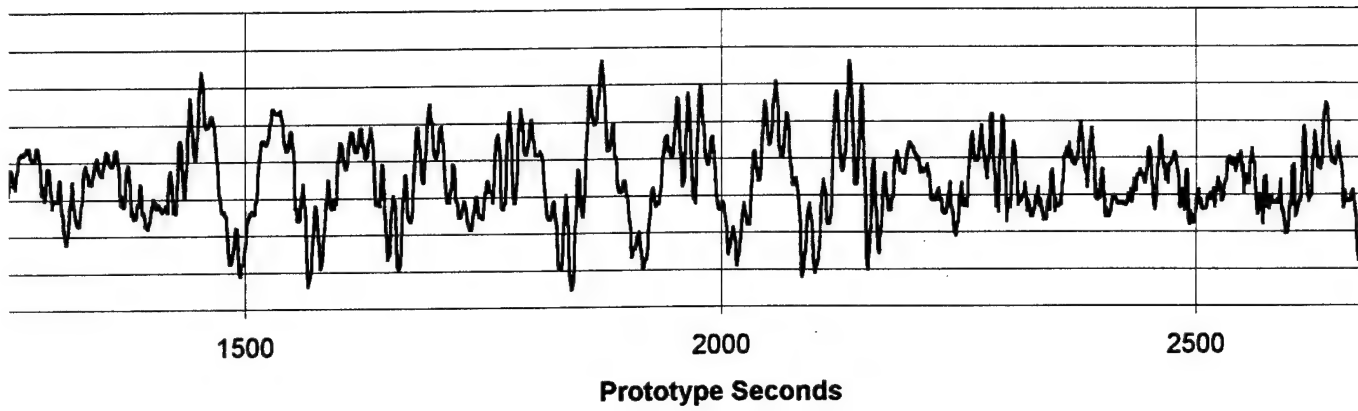
TEST A1108 - PT SURGE



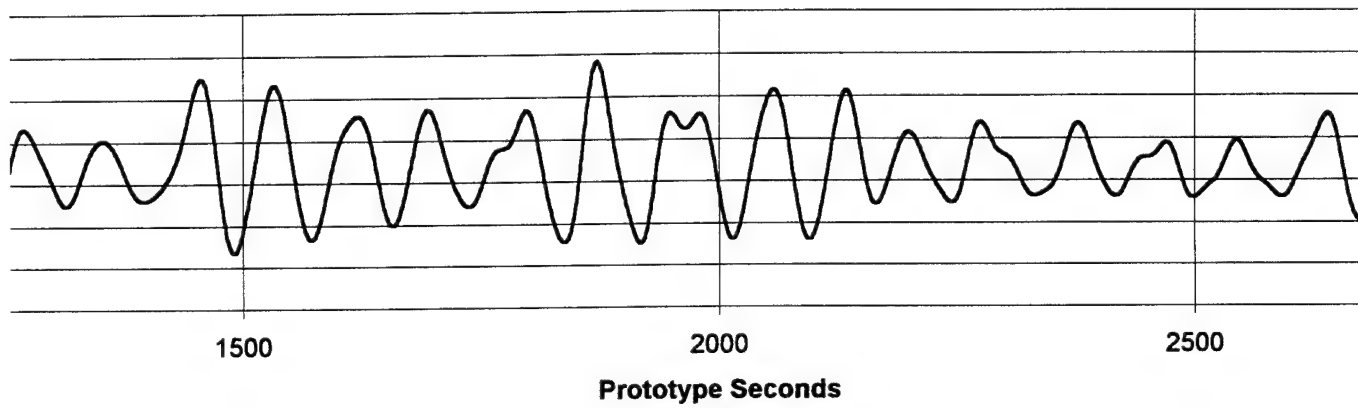
TEST A1108 - PT HEAVE



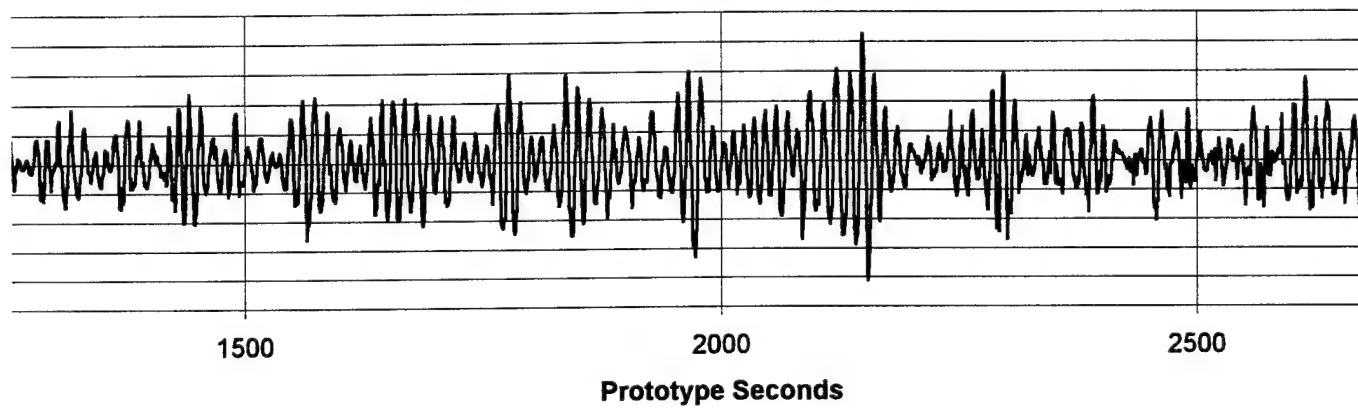
Unfiltered Time History



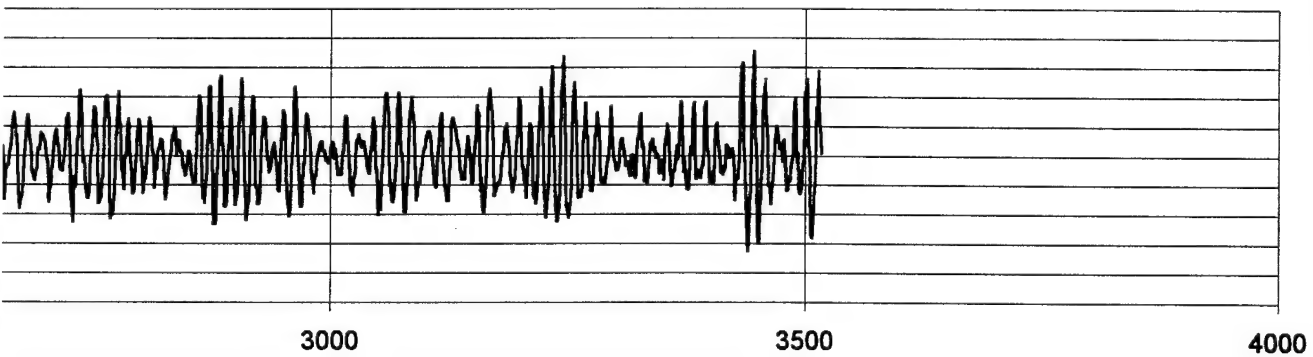
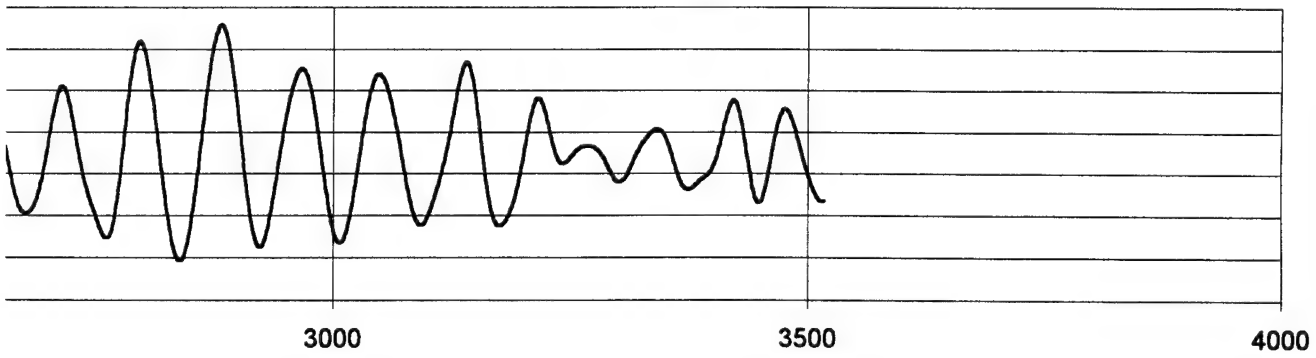
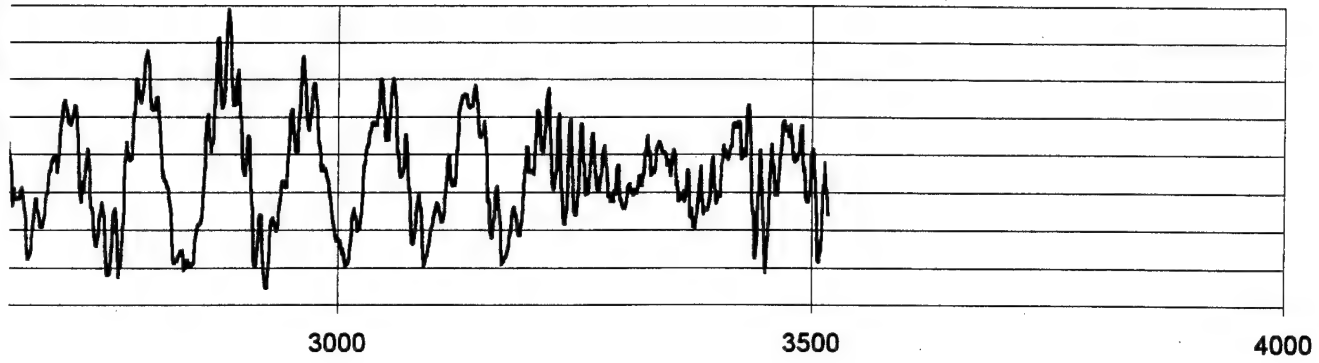
Filtered Low Frequency Time History



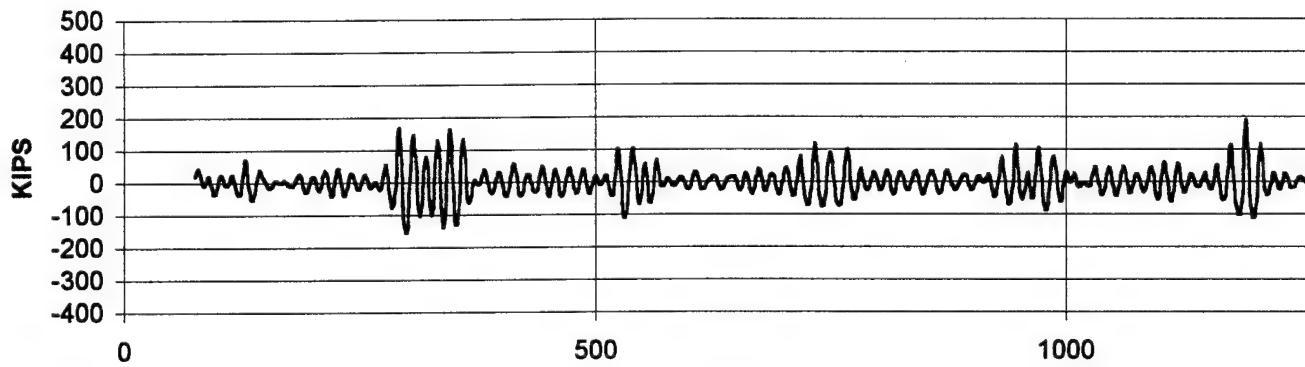
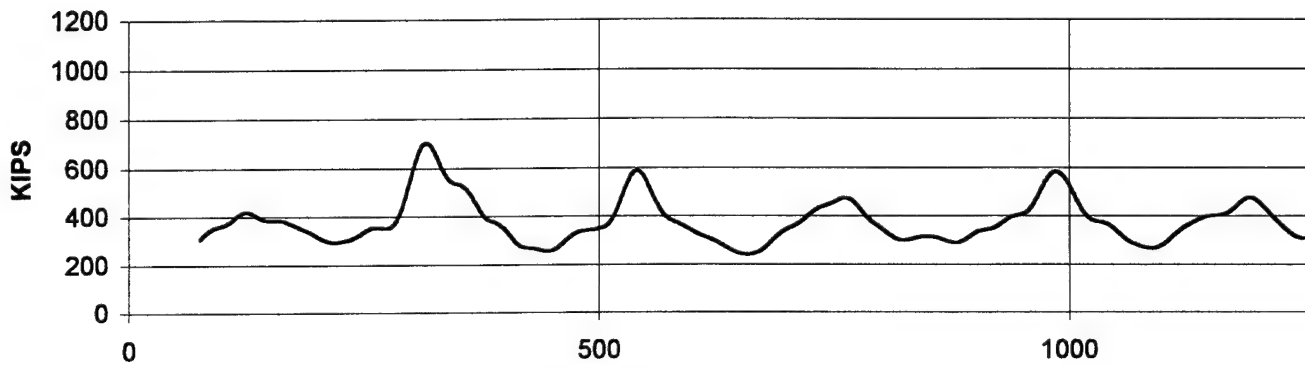
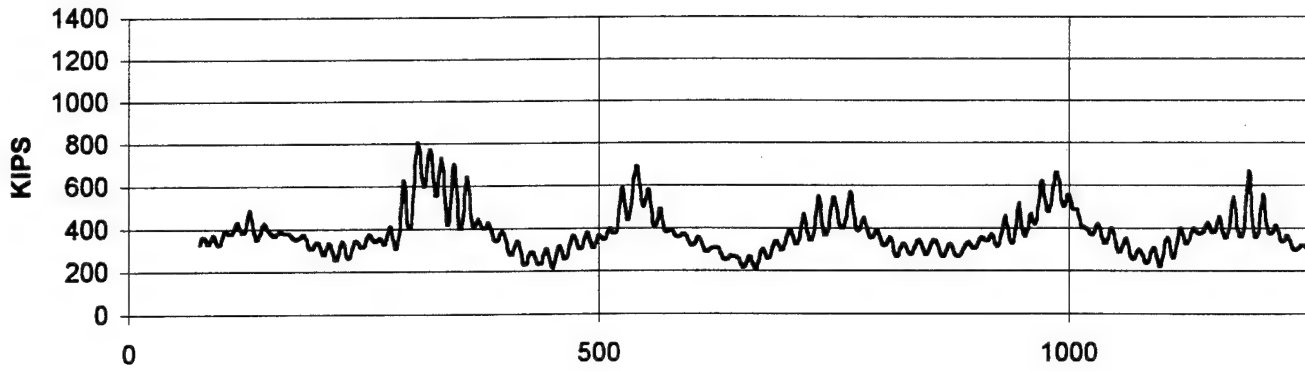
Filtered High Frequency Time History



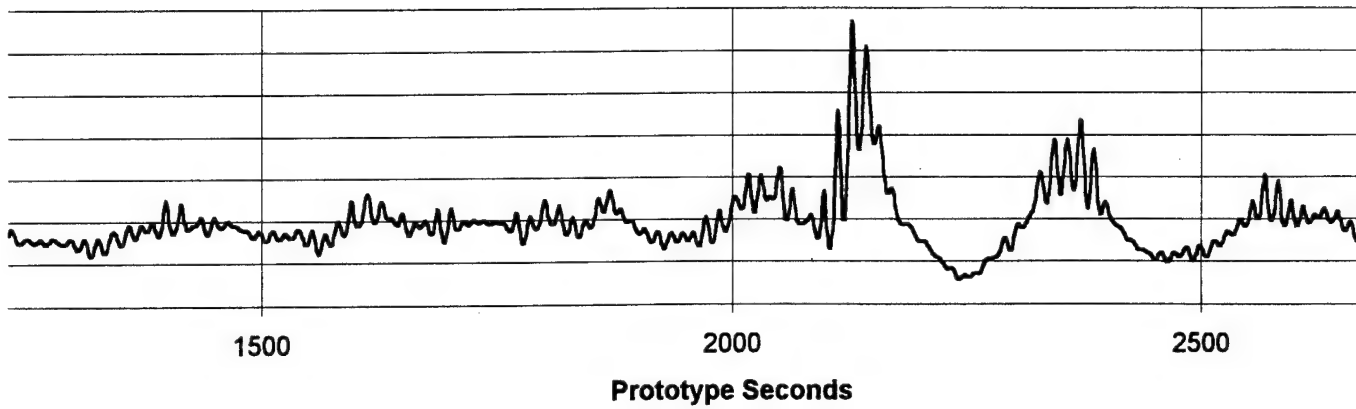
TEST A1108 - PT HEAVE



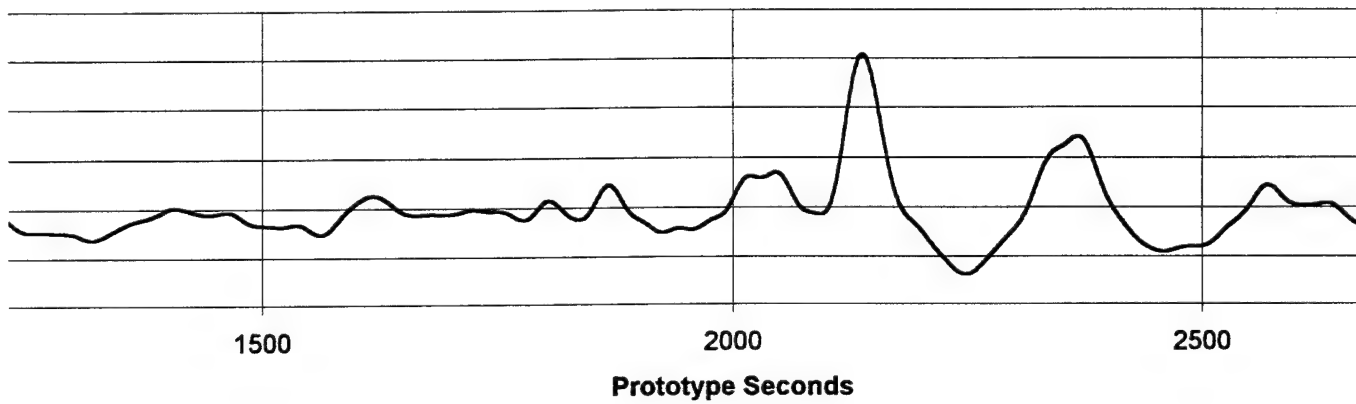
TEST A1109 - ML_1 TENSION



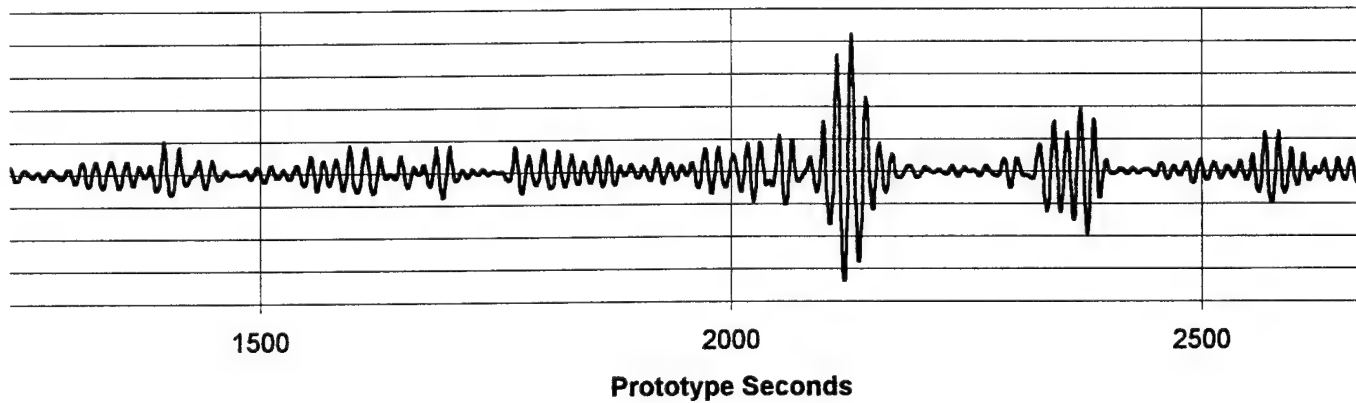
Unfiltered Time History



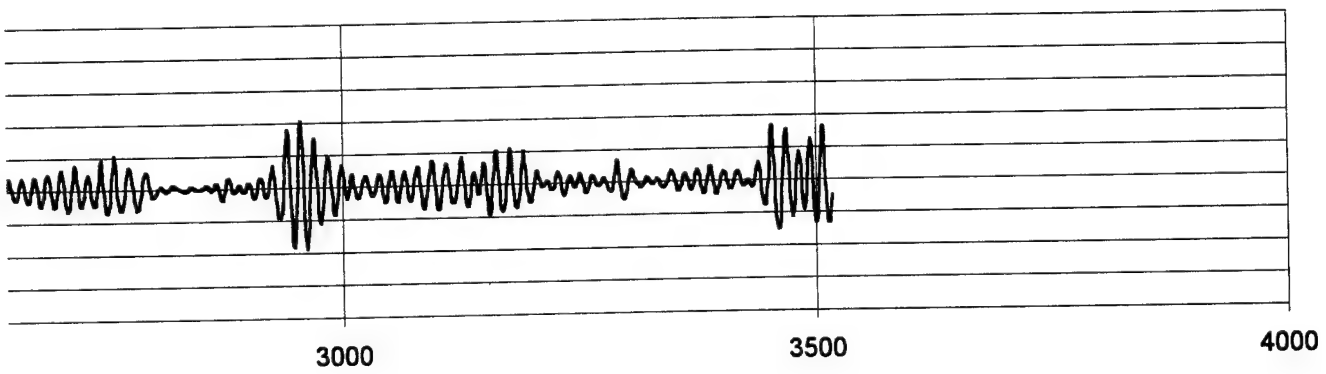
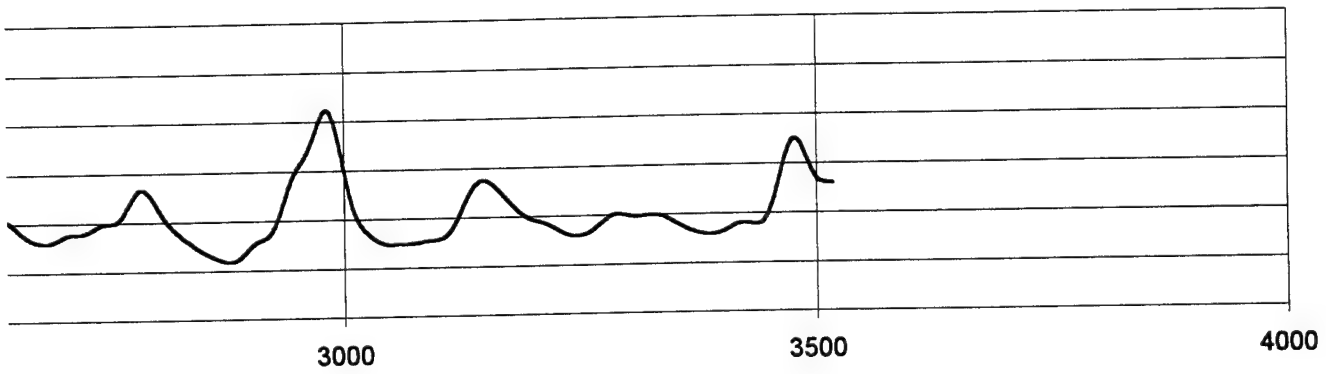
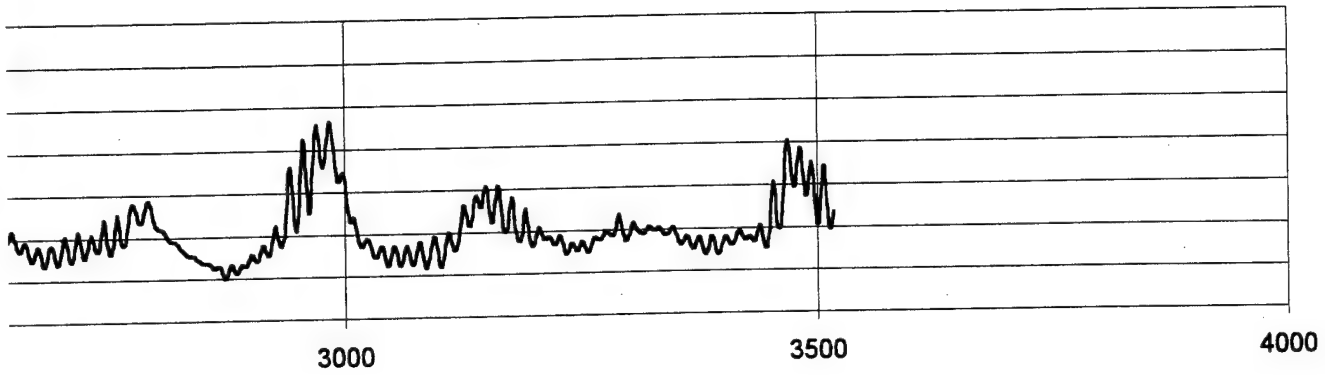
Filtered Low Frequency Time History



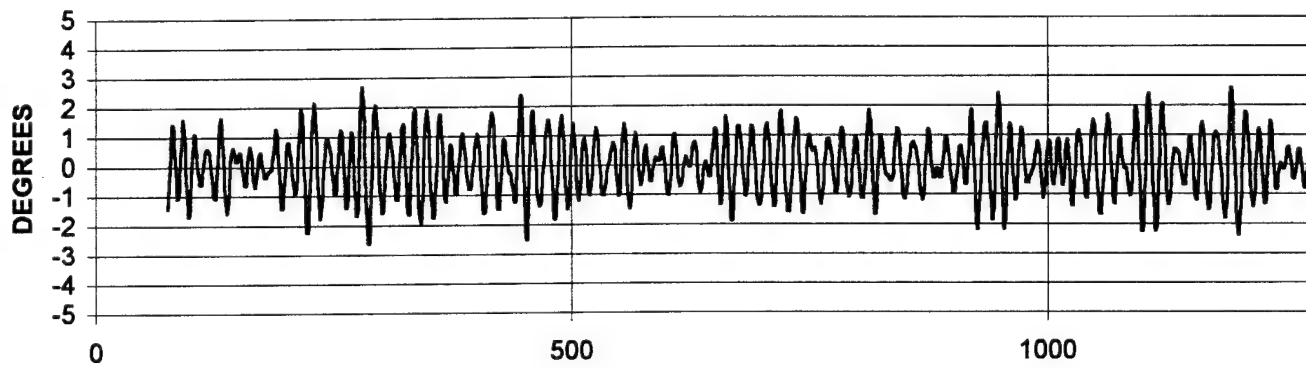
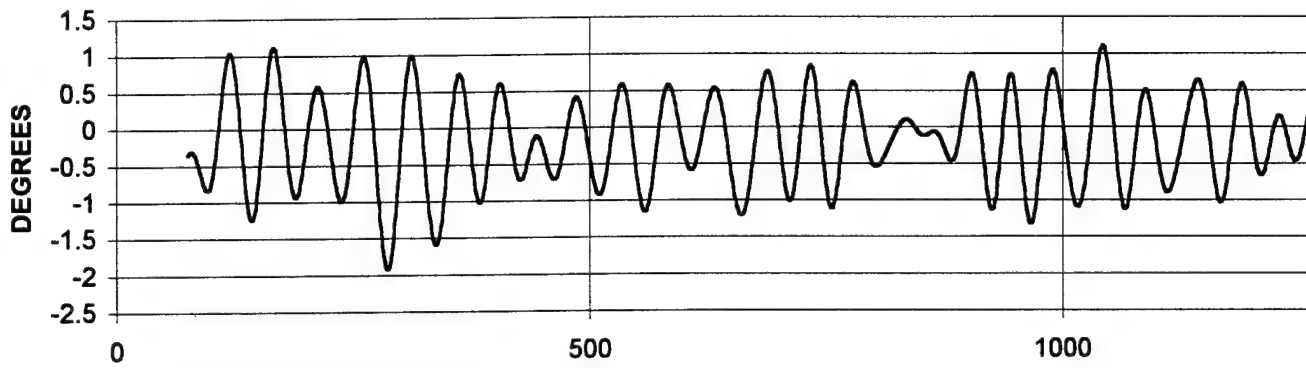
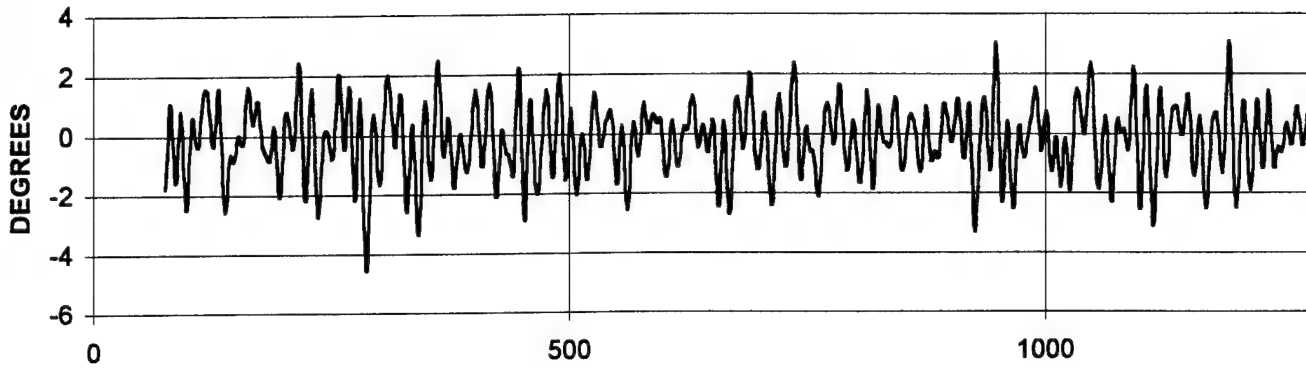
Filtered High Frequency Time History



TEST A1109 - ML_1 TENSION

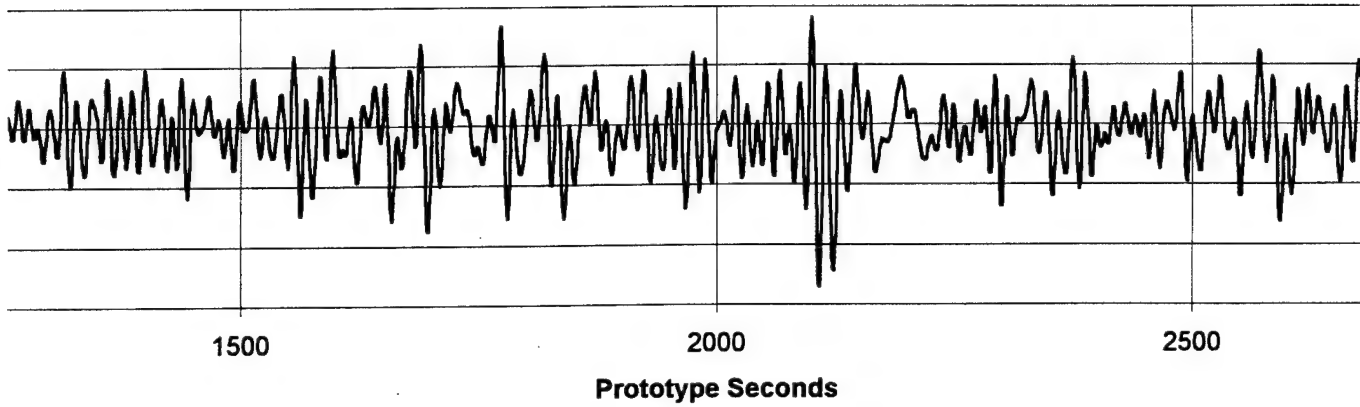


TEST A1109 - PITCH

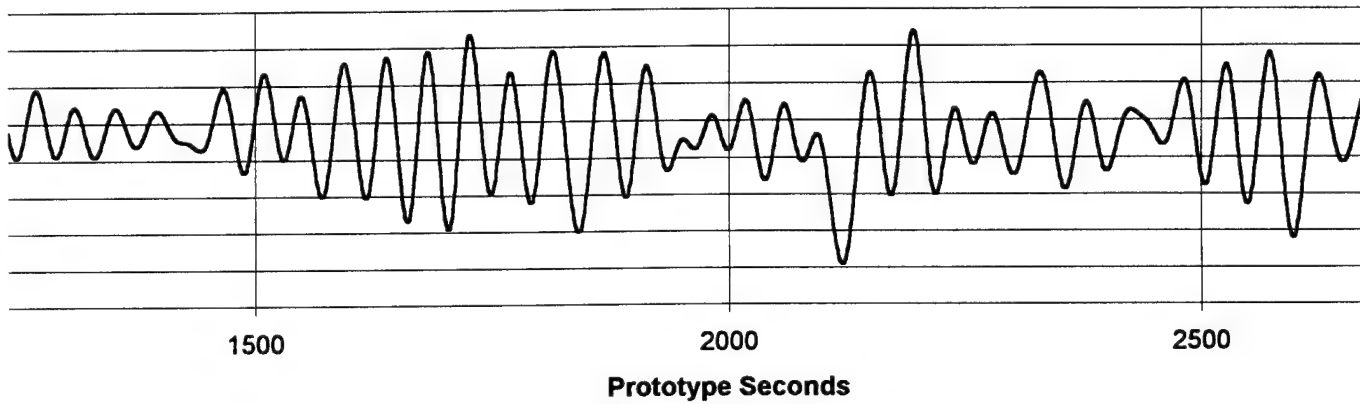


TEST A1109 - PITCH

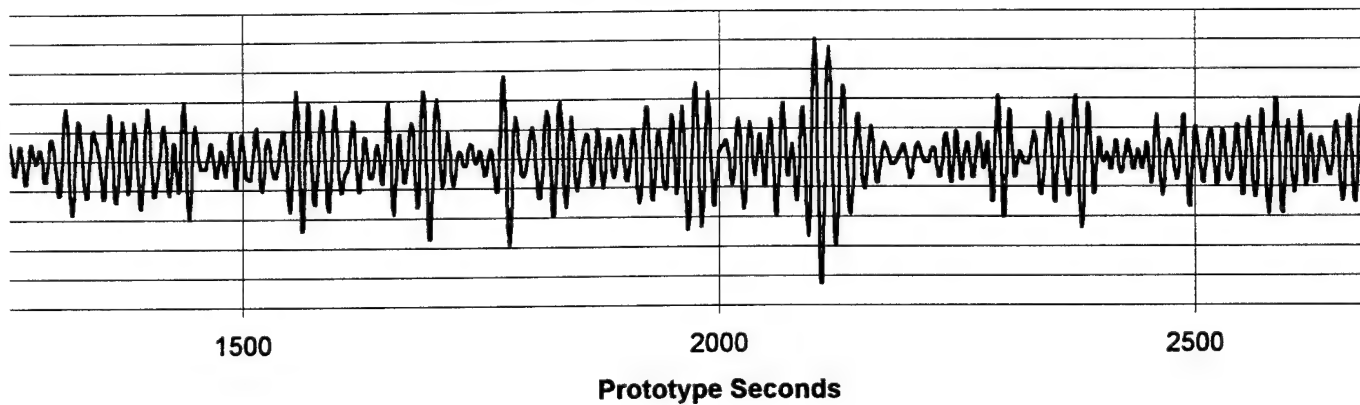
Unfiltered Time History



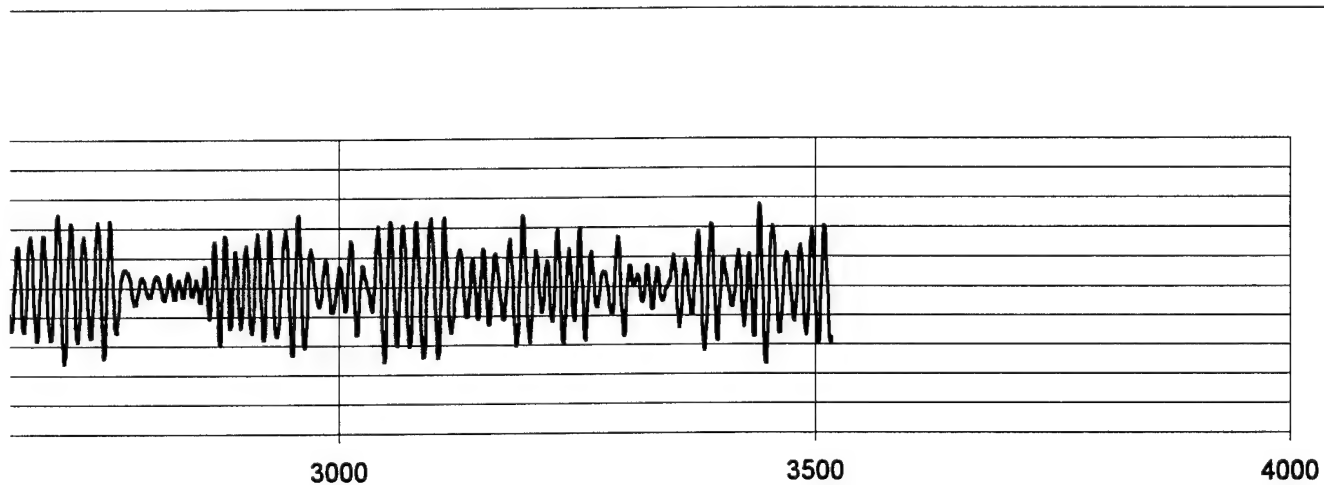
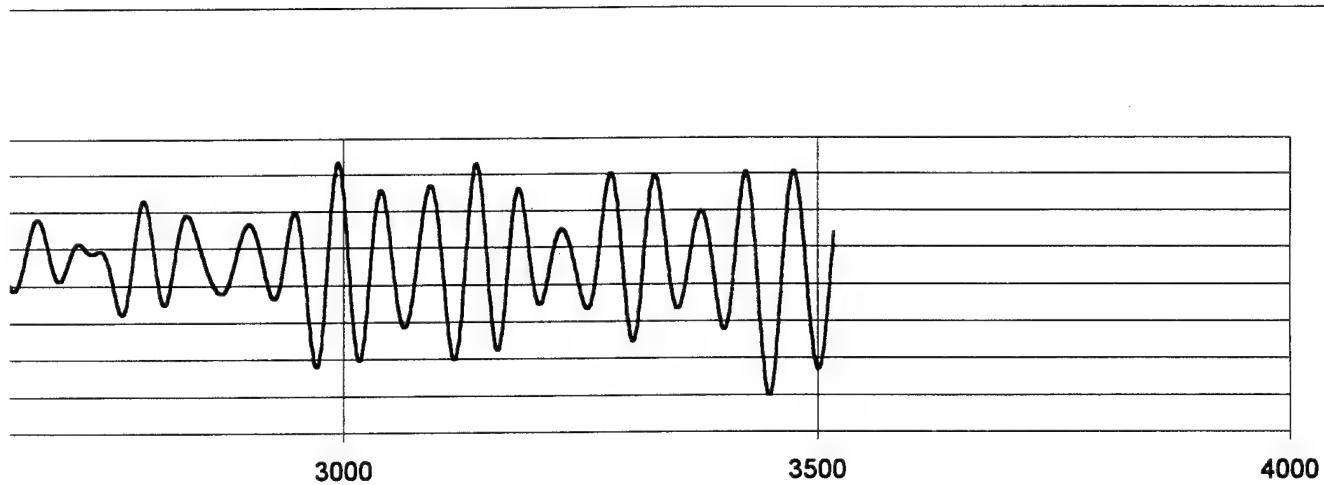
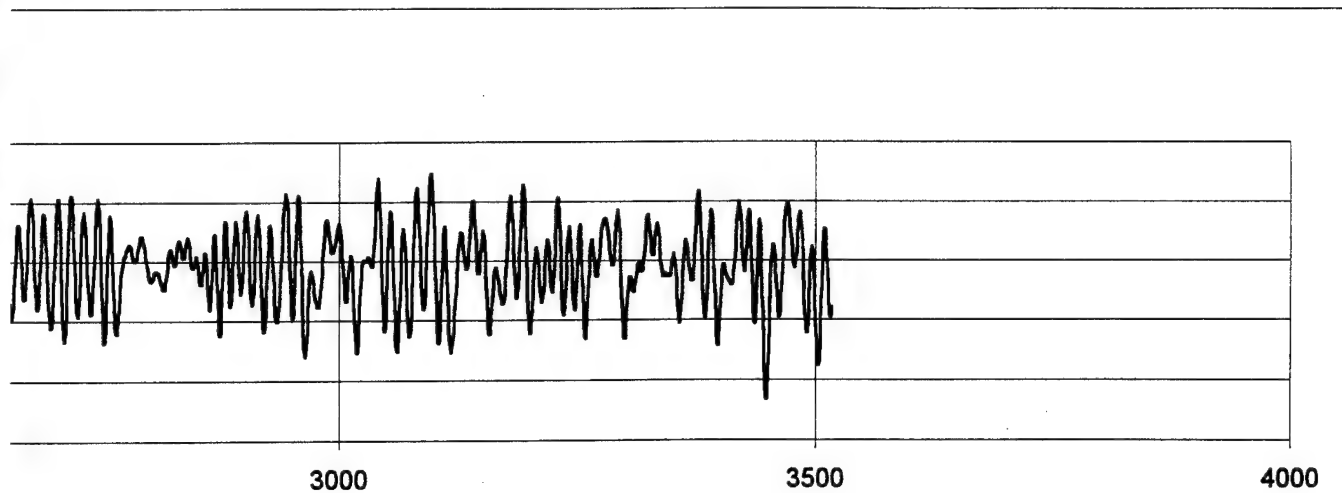
Filtered Low Frequency Time History



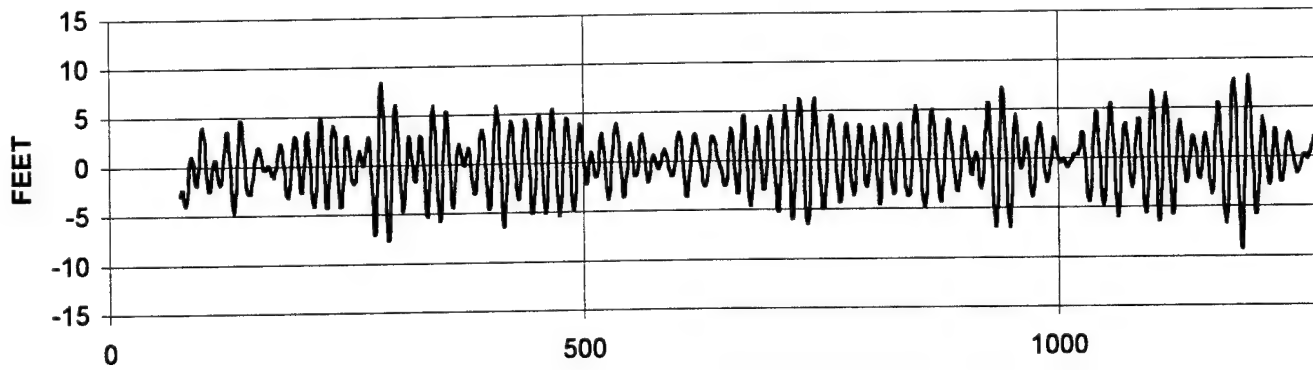
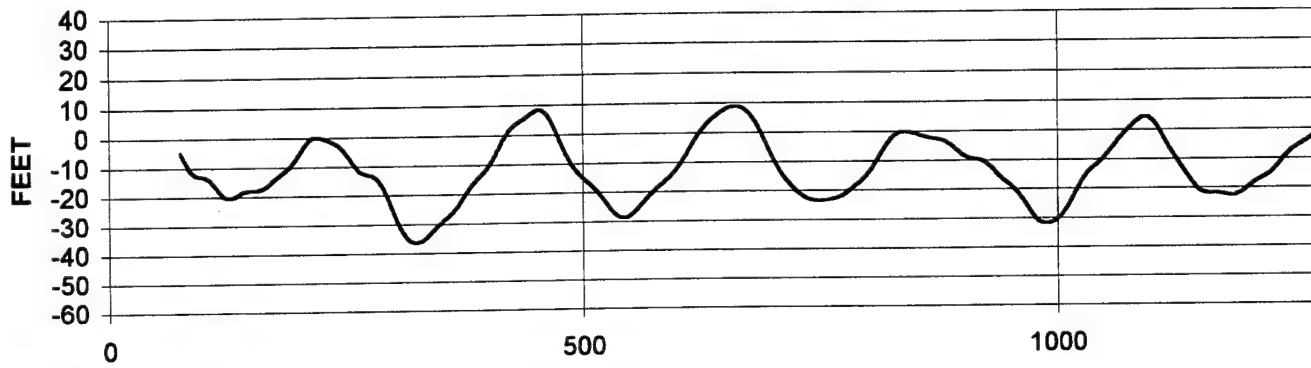
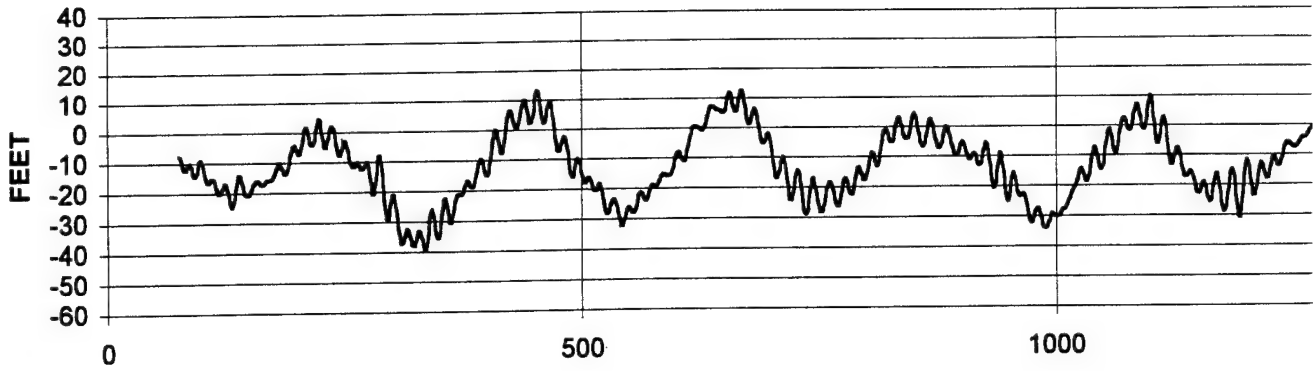
Filtered High Frequency Time History



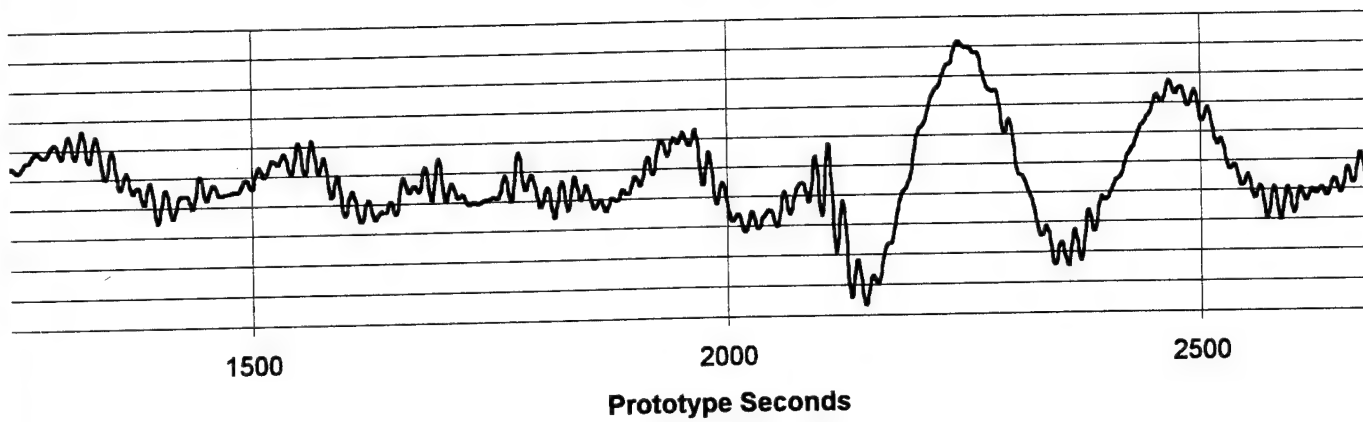
TEST A1109 - PITCH



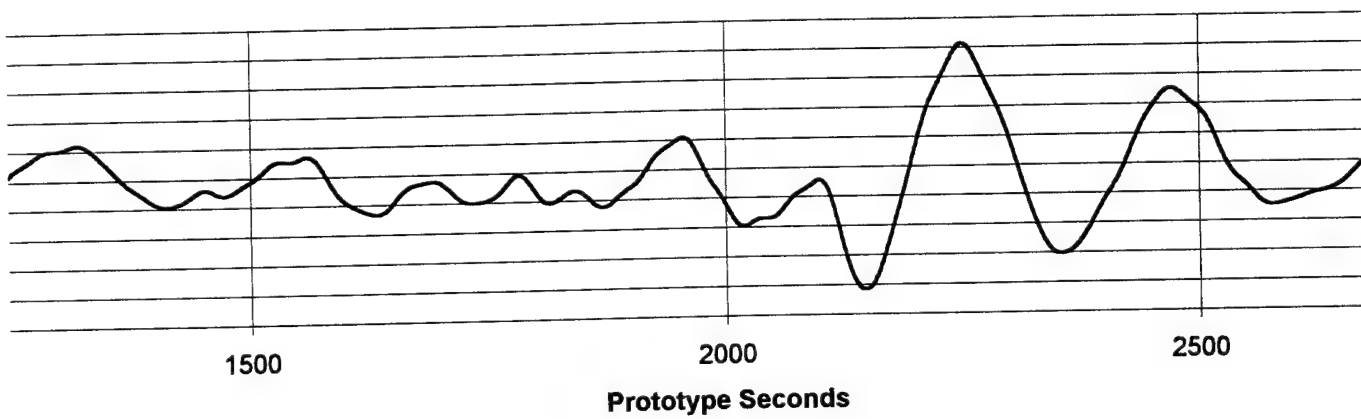
TEST A1109 - PT SURGE



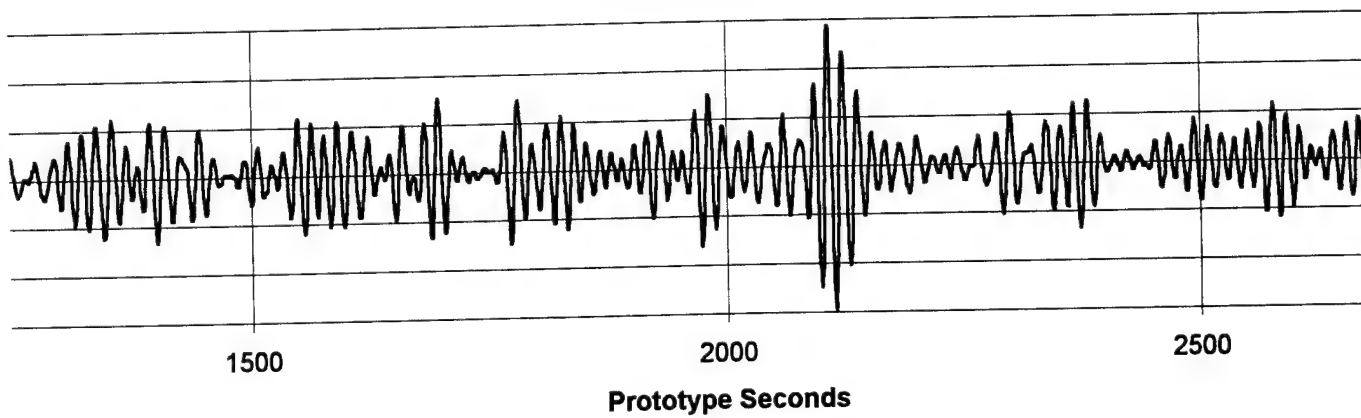
Unfiltered Time History



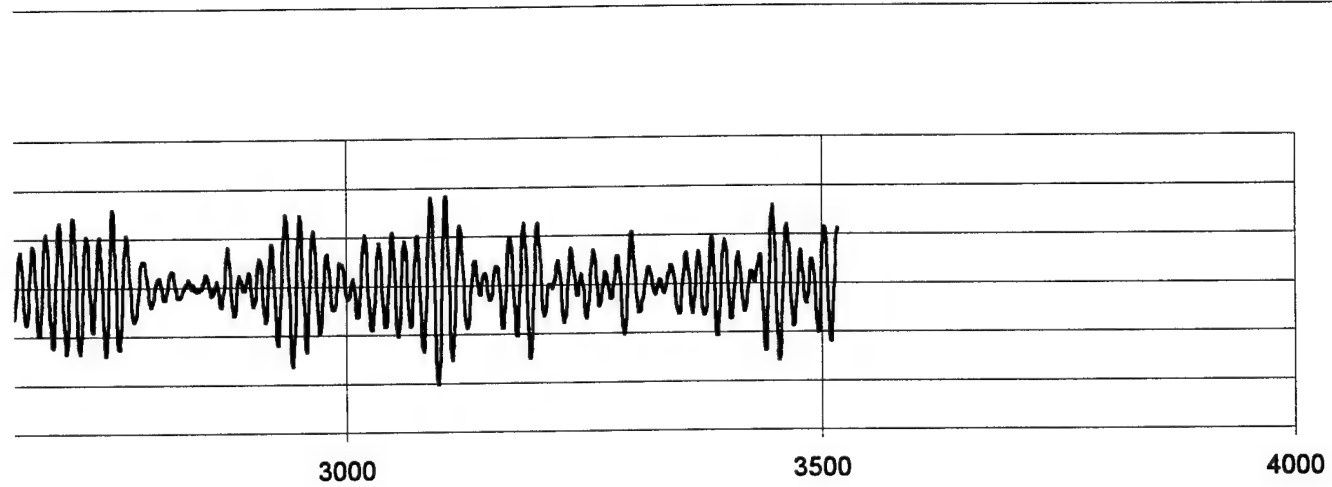
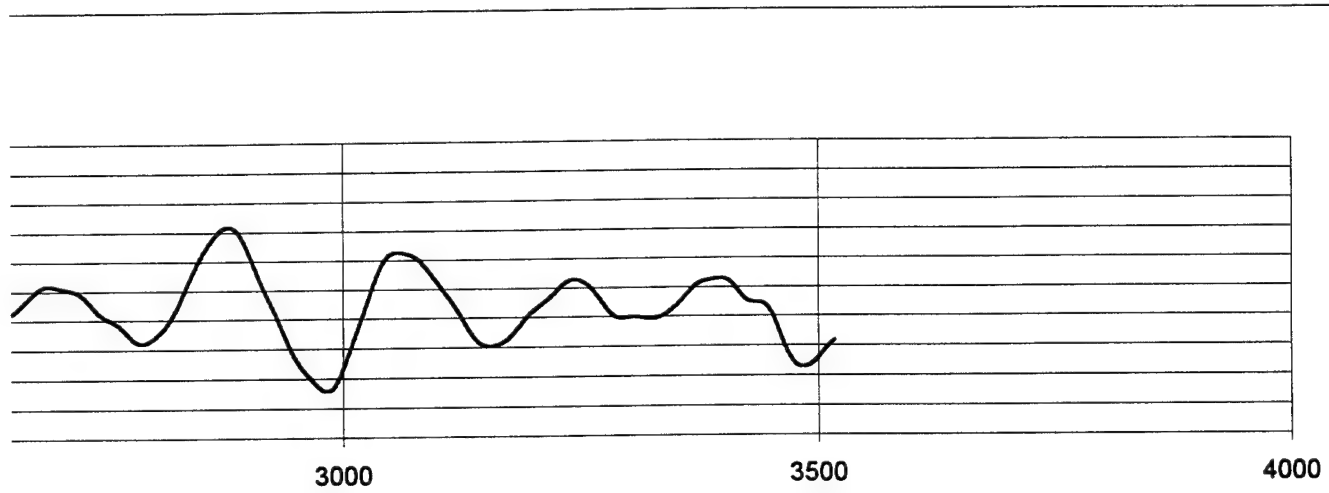
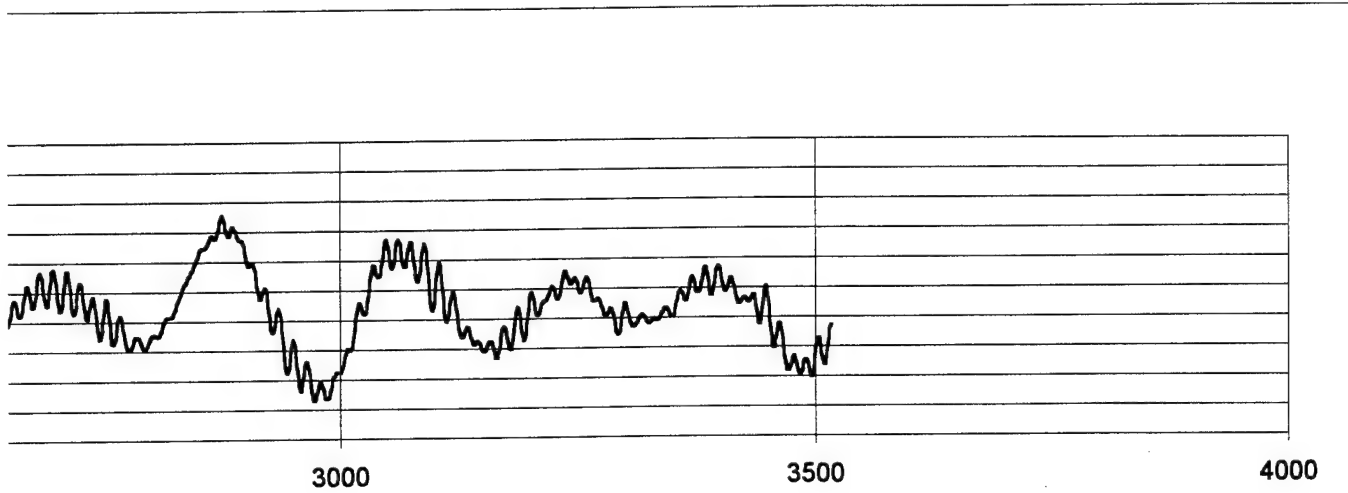
Filtered Low Frequency Time History



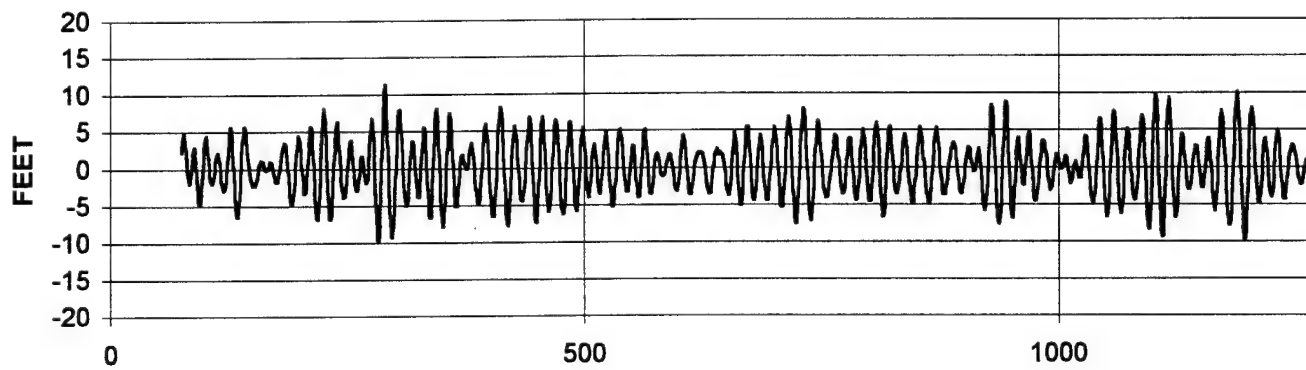
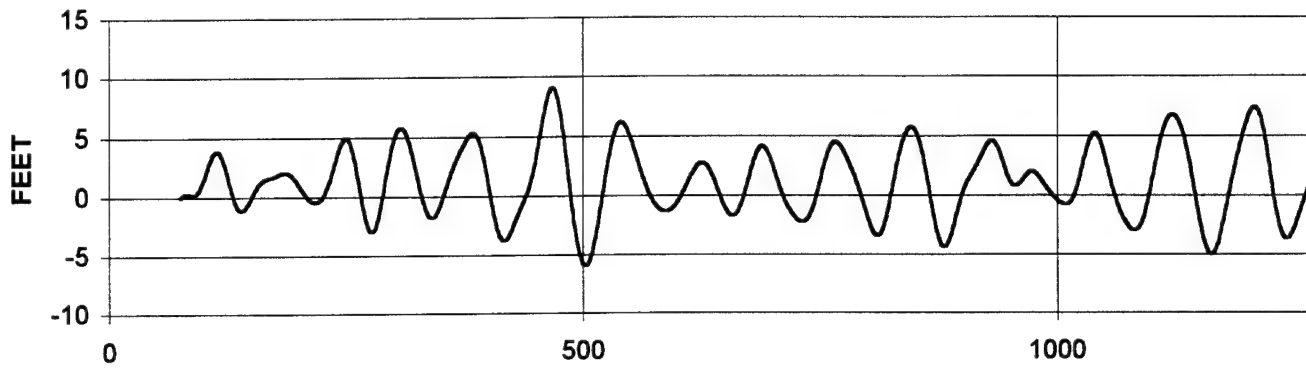
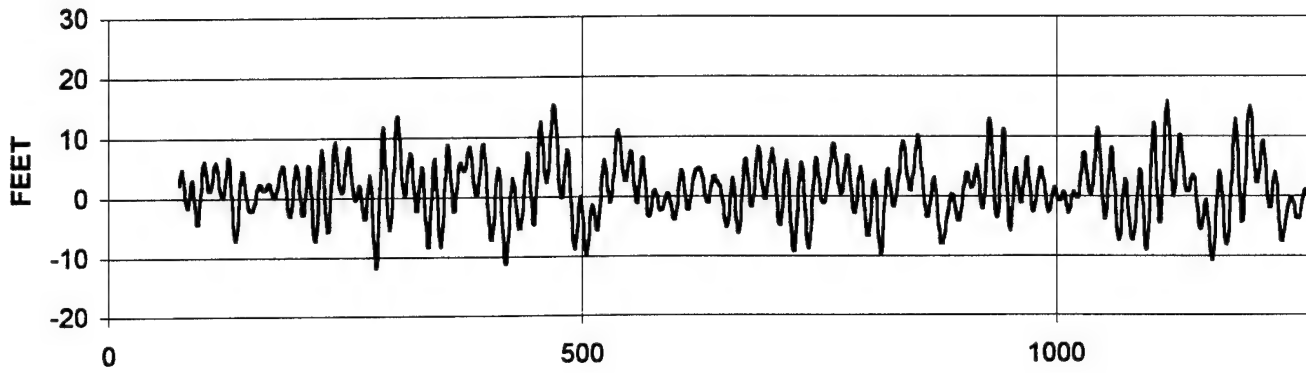
Filtered High Frequency Time History



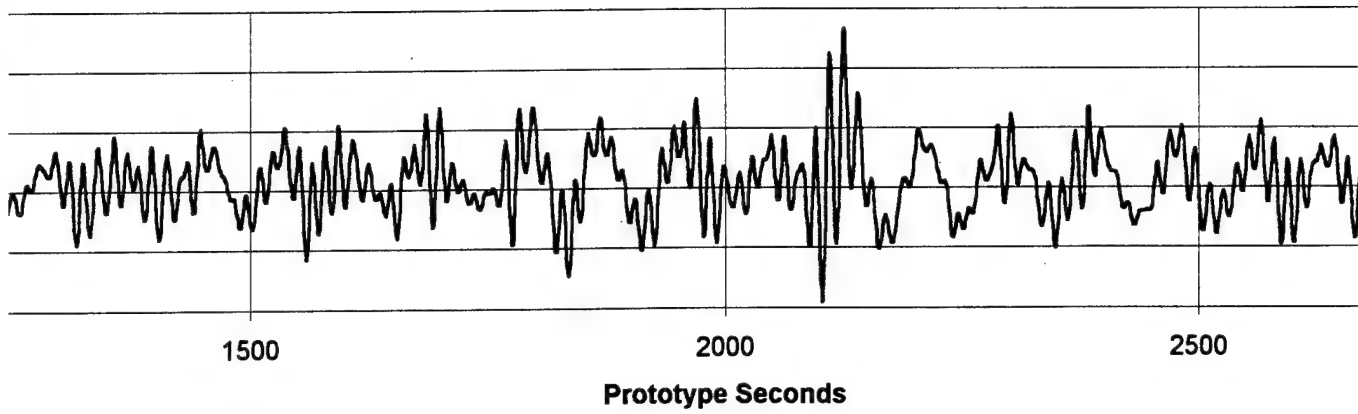
TEST A1109 - PT SURGE



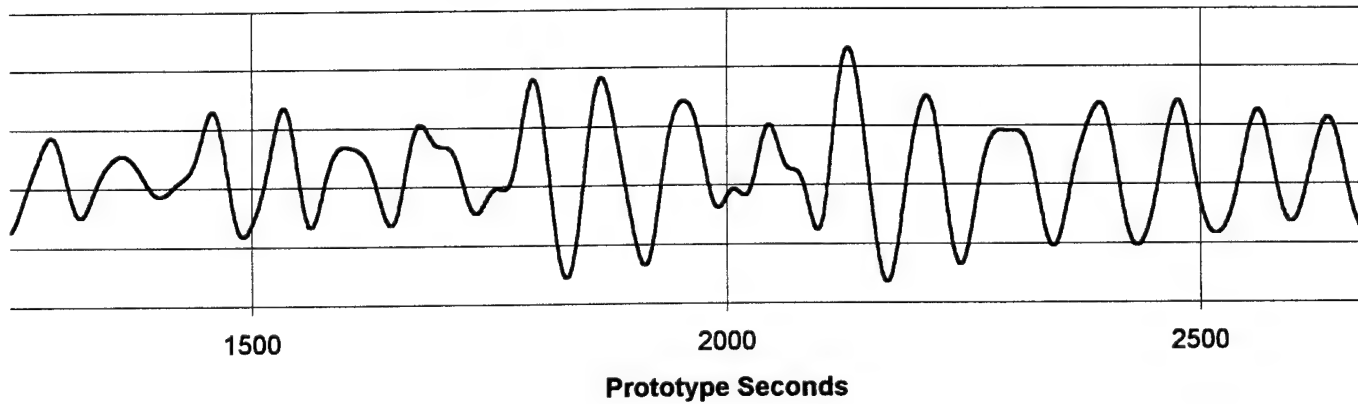
TEST A1109 - PT HEAVE



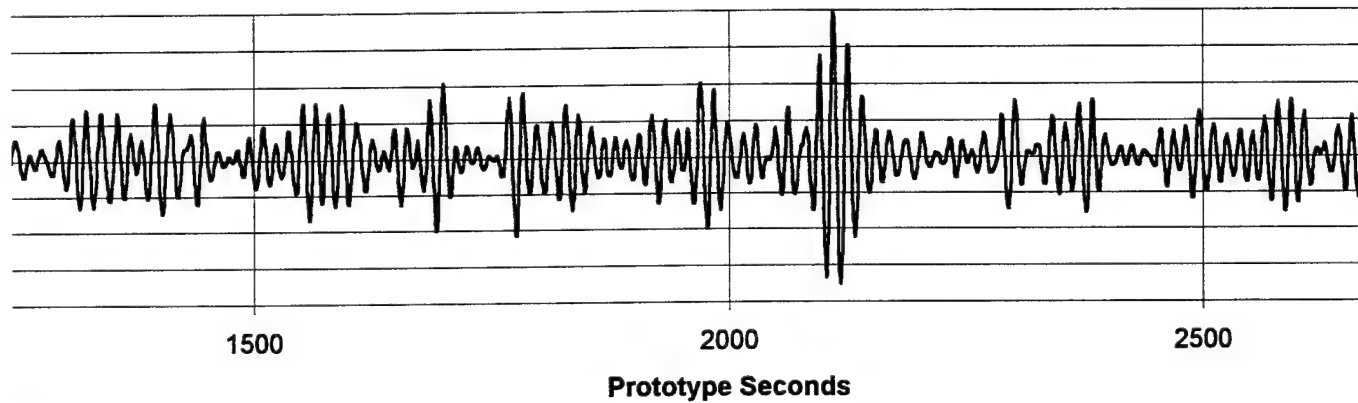
Unfiltered Time History



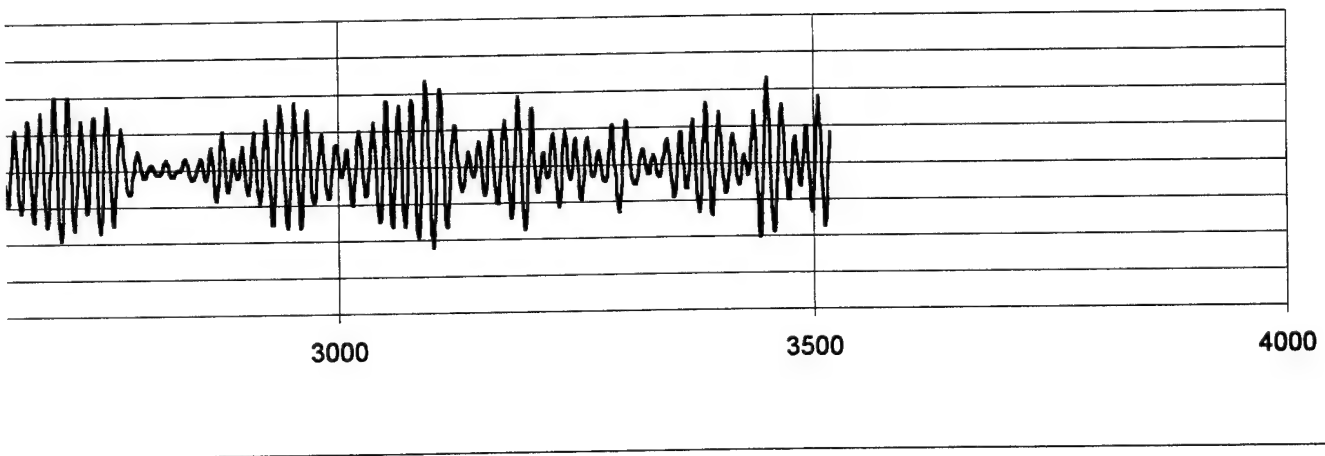
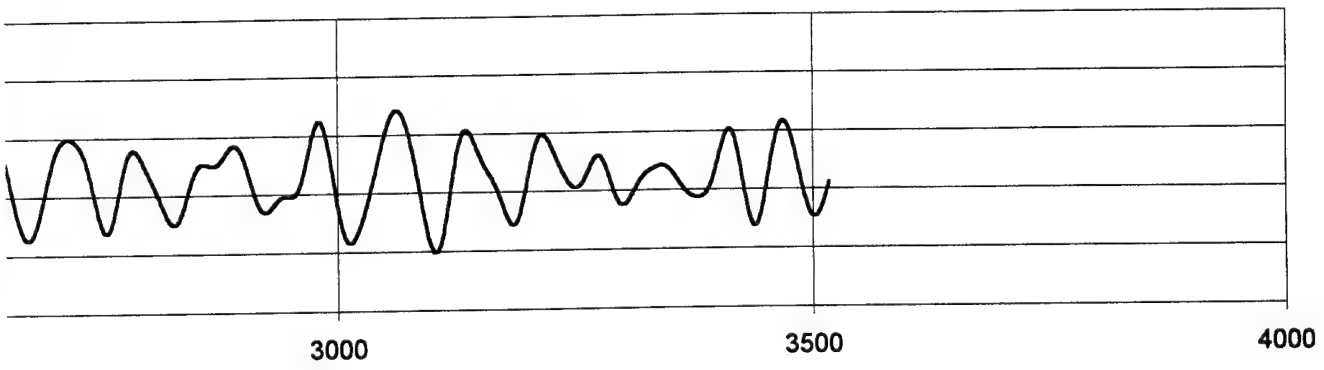
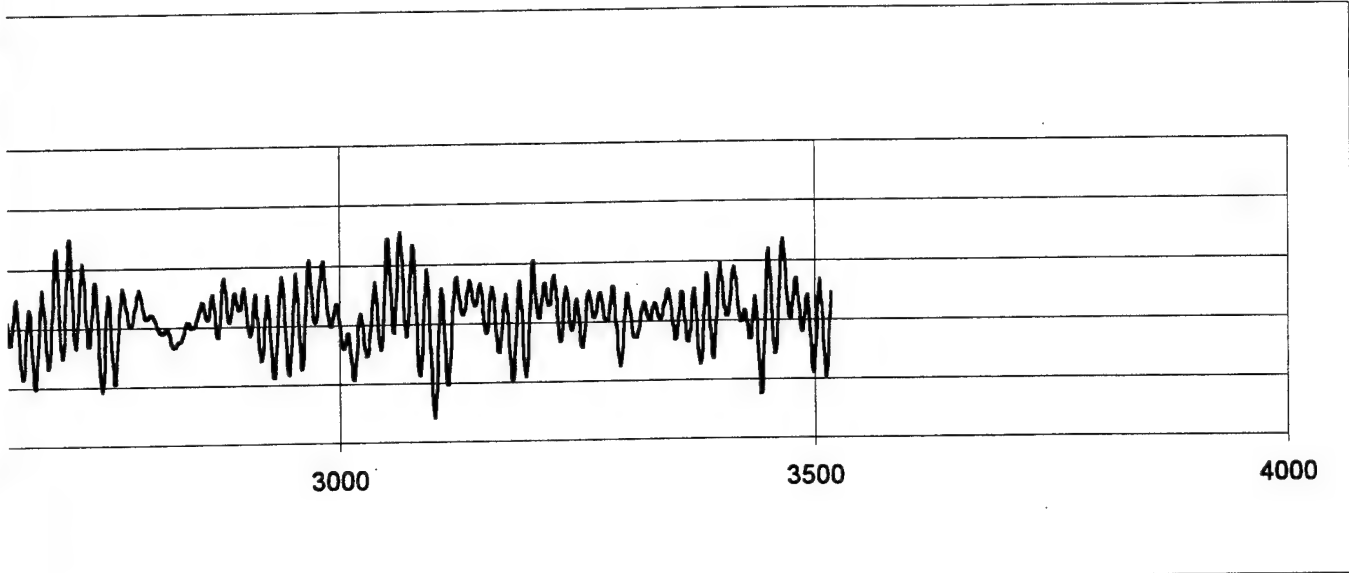
Filtered Low Frequency Time History



Filtered High Frequency Time History



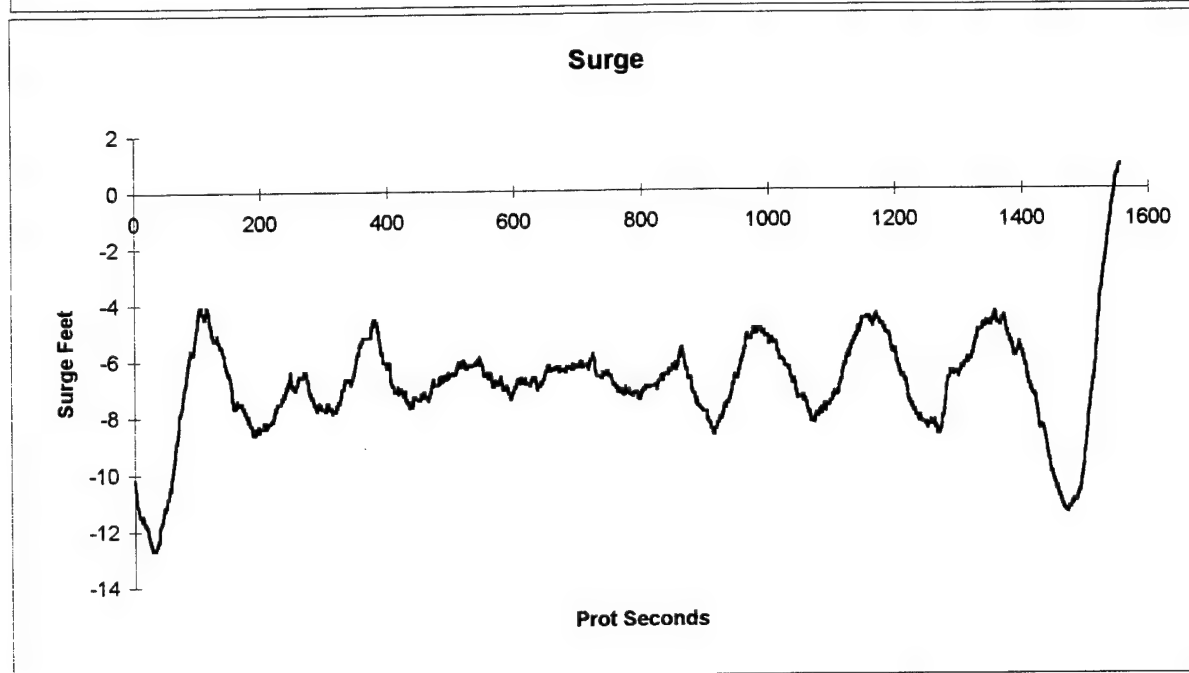
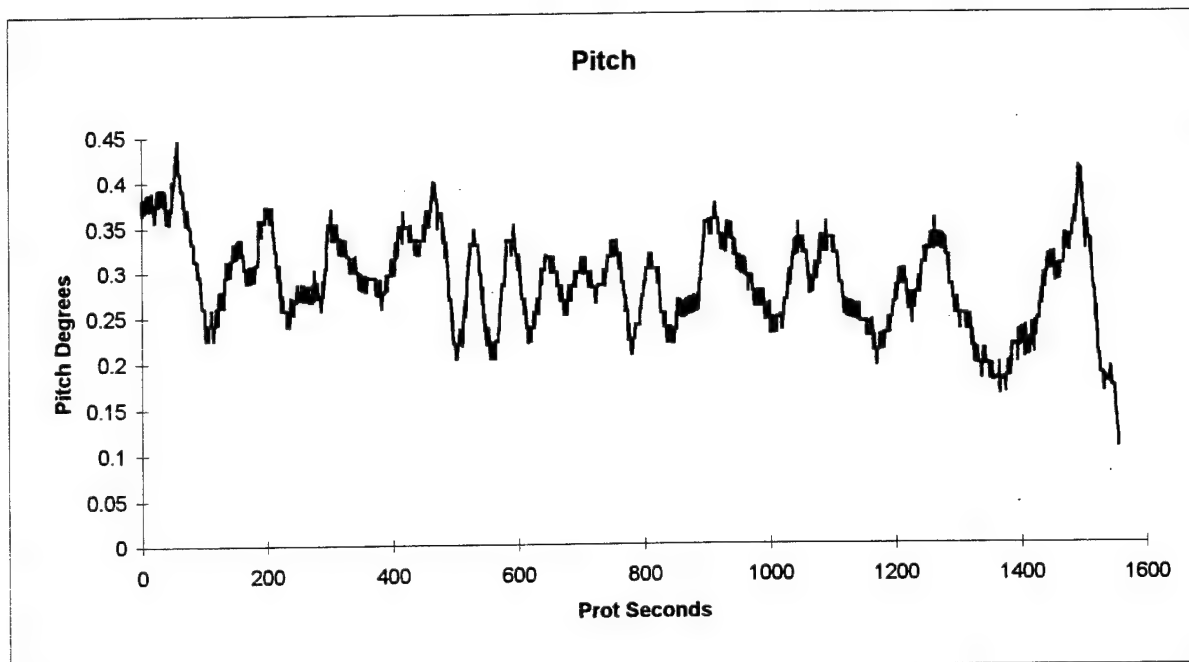
TEST A1109 - PT HEAVE

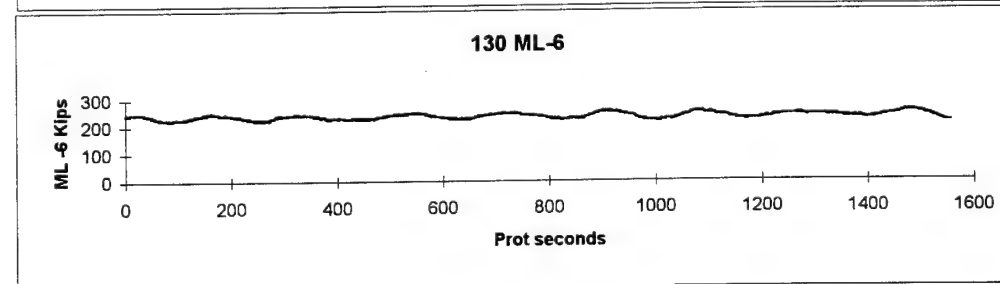
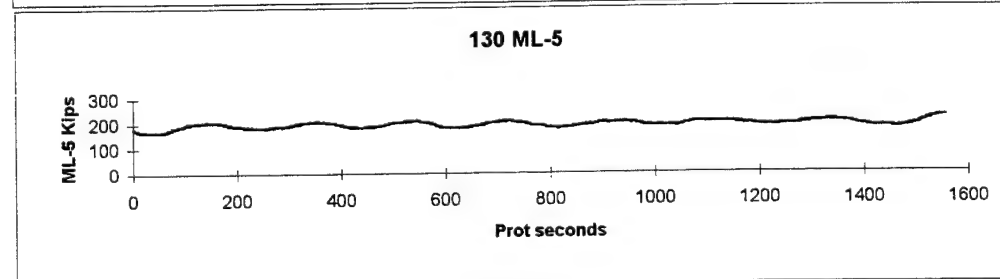
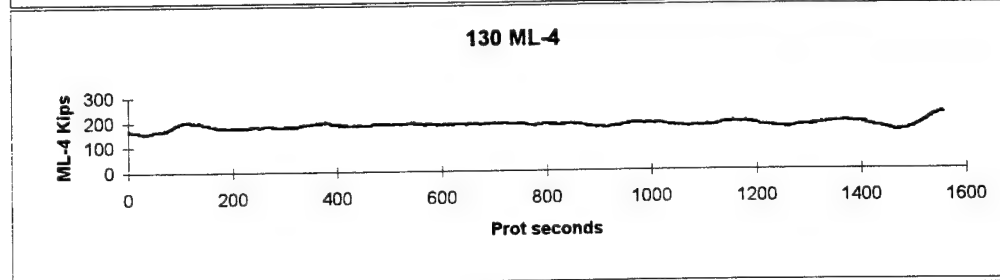
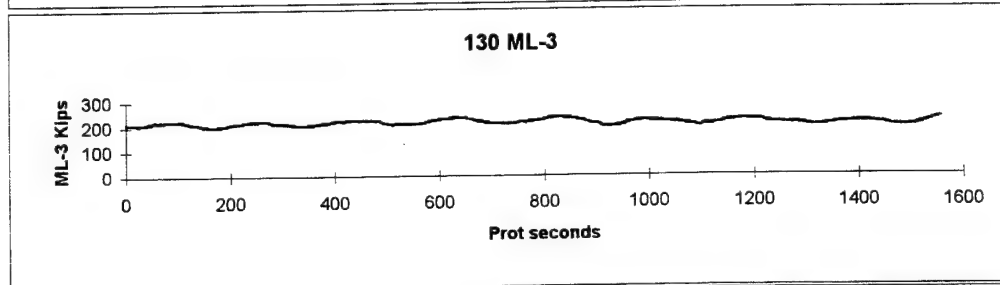
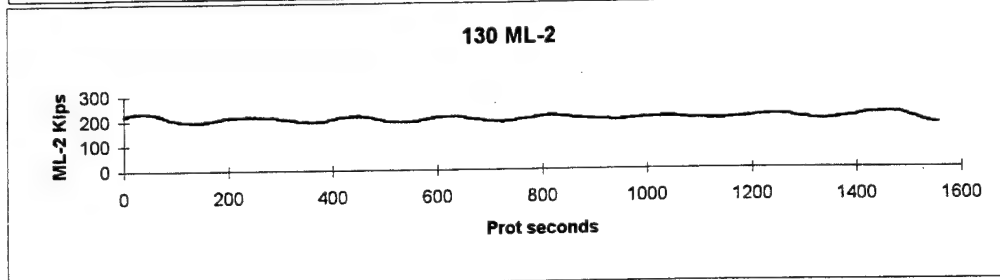
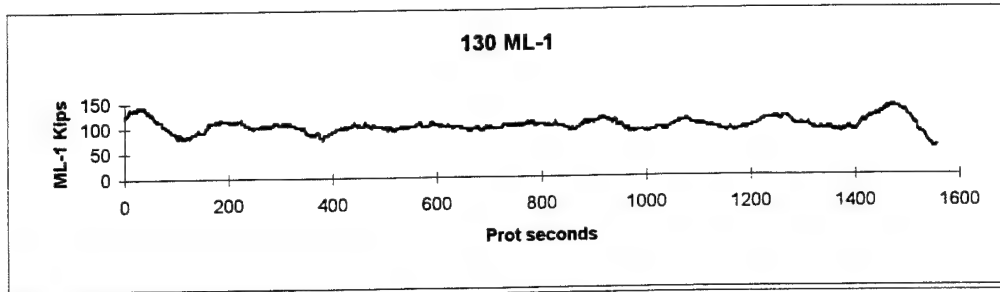


APPENDIX J

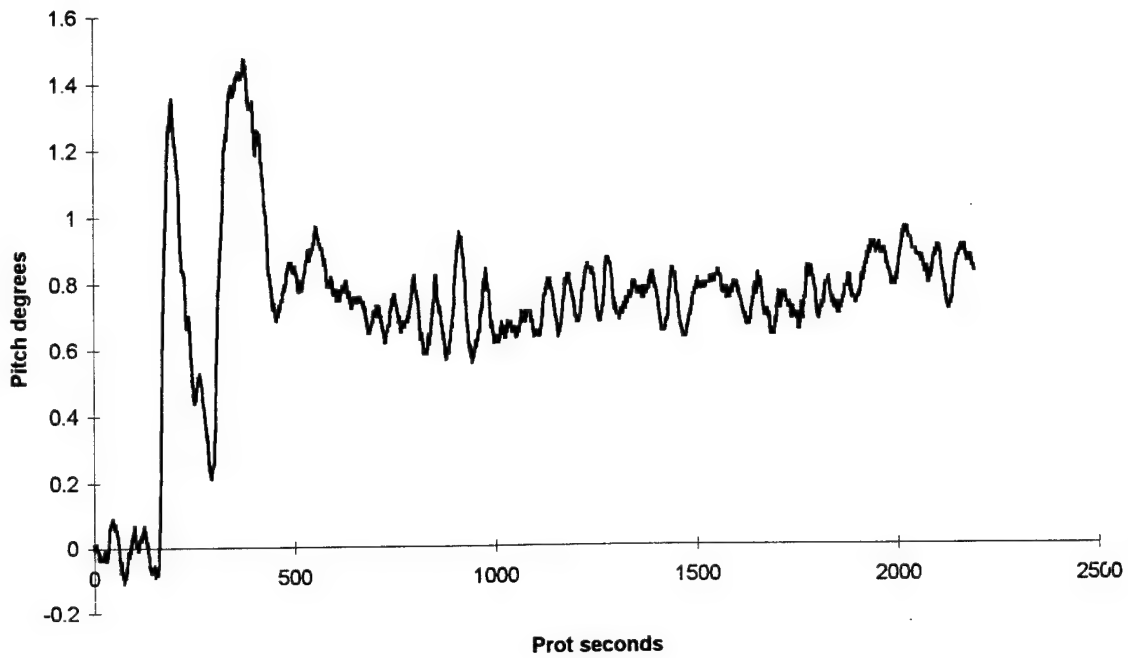
TOWING TEST TIME HISTORY PLOTS

130 pit_sur

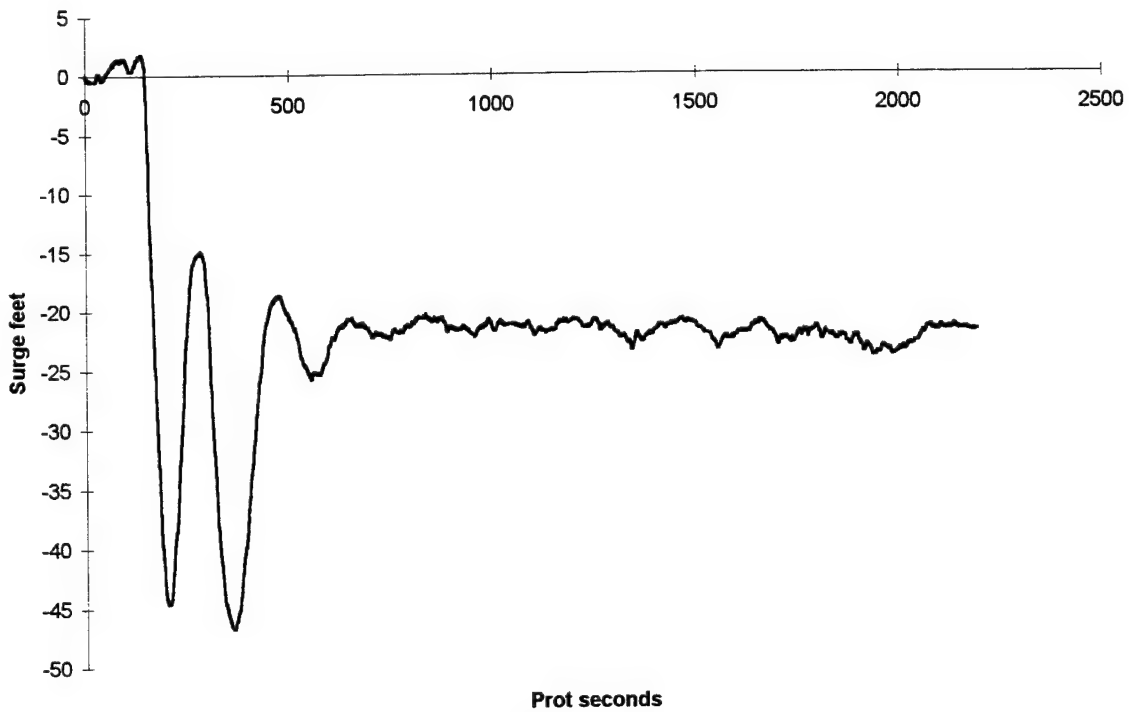




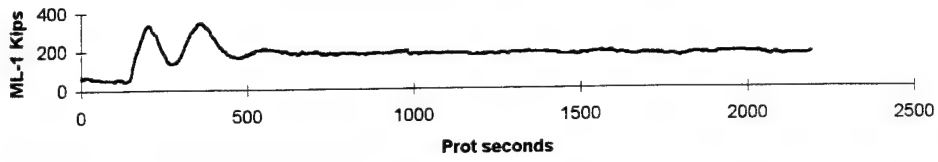
131 Pitch



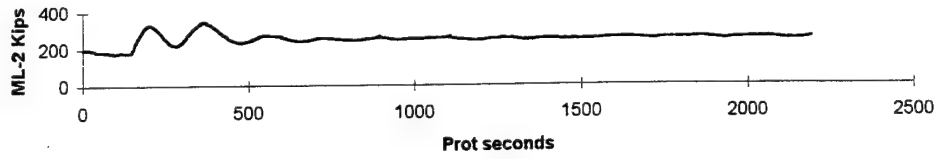
131 Surge



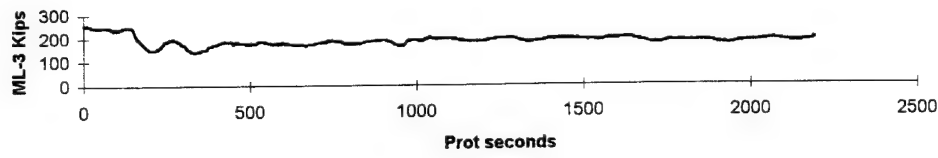
131 ML-1



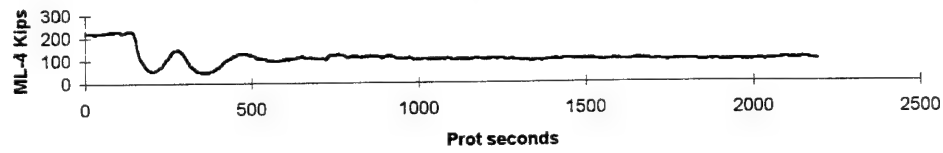
131 ML-2



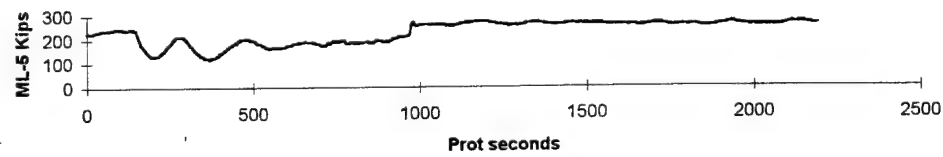
131 ML-3



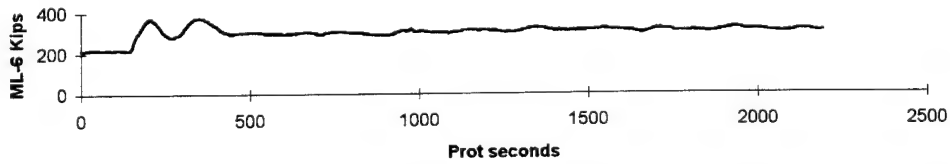
131 ML-4



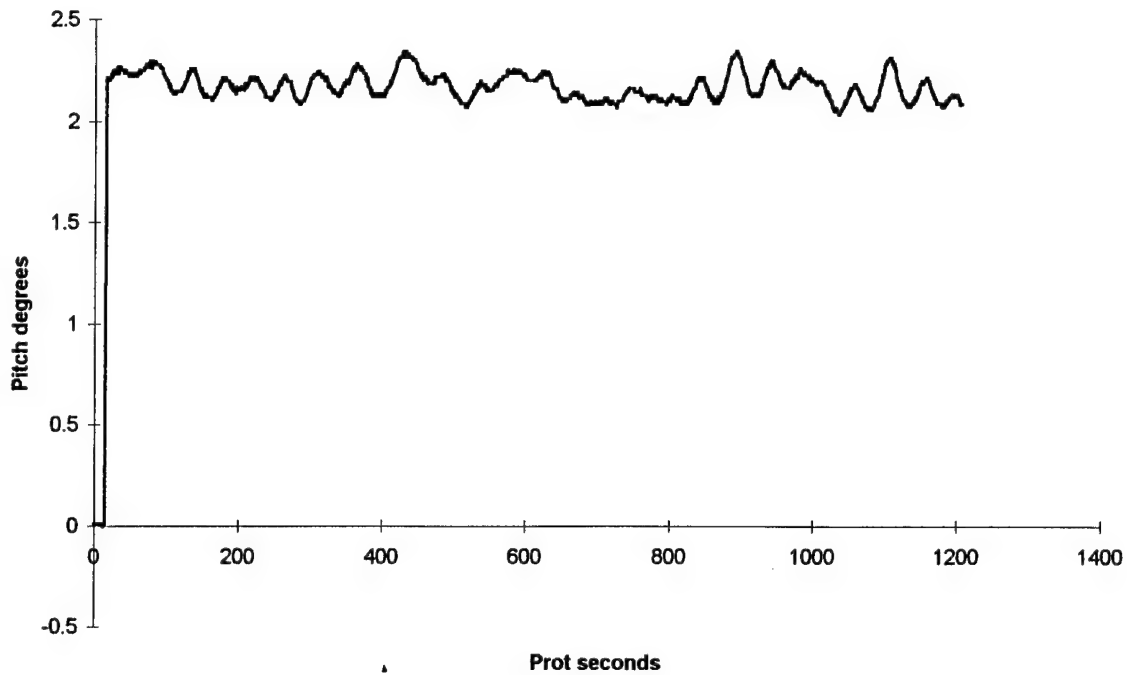
131 ML-5



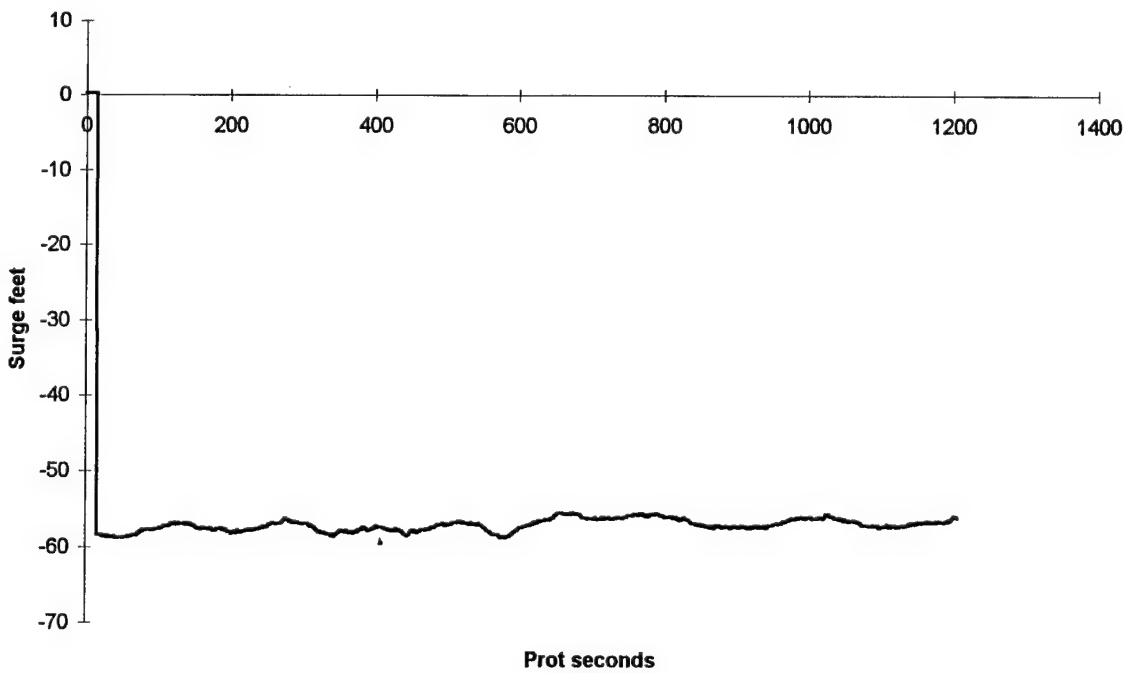
131 ML-6



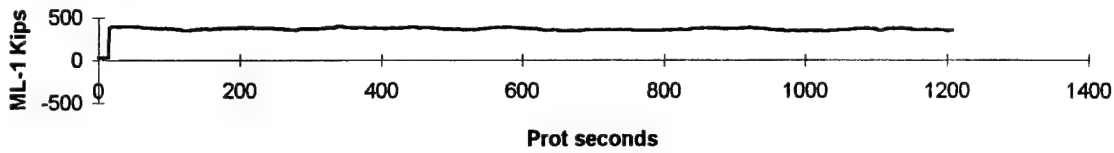
132 - Pitch



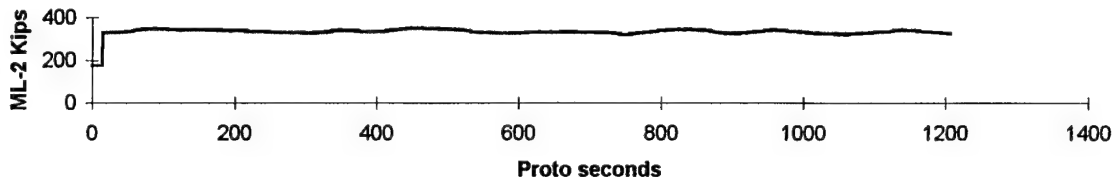
132 - Surge



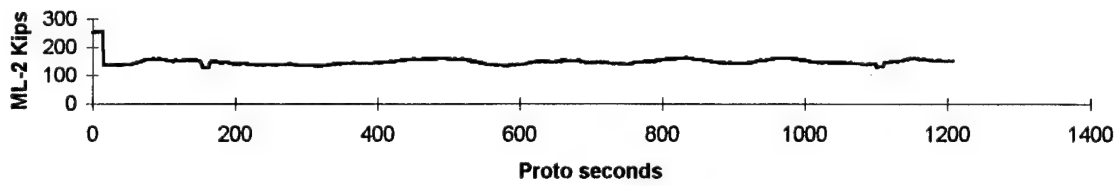
132 - ML1



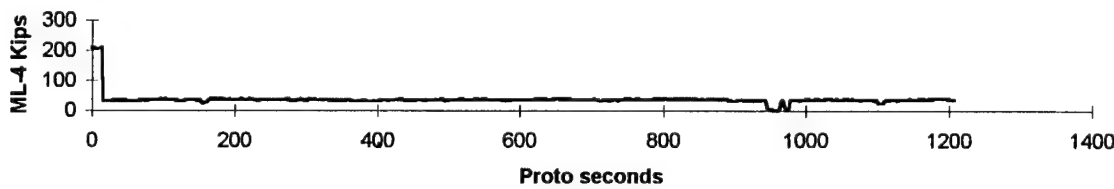
132 - ML2



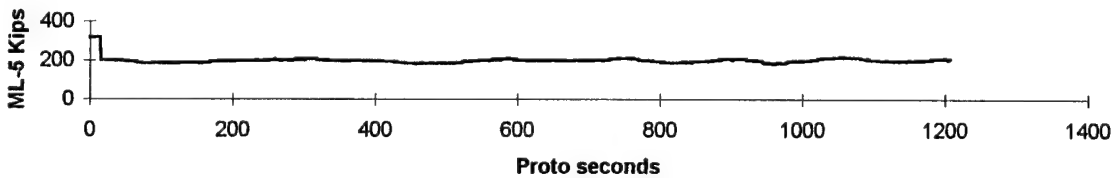
132 - ML3



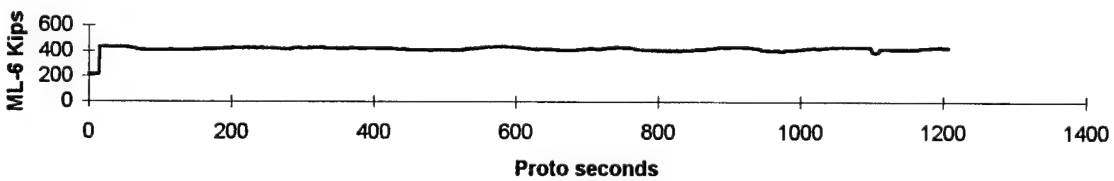
132 - ML4



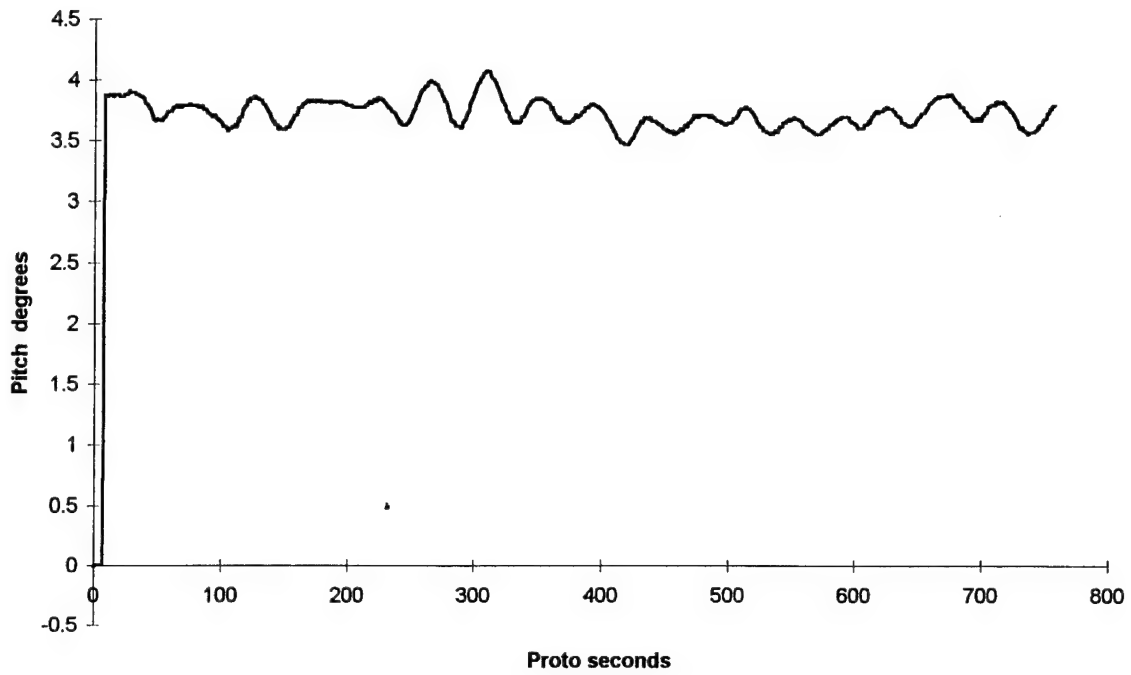
132 ML5



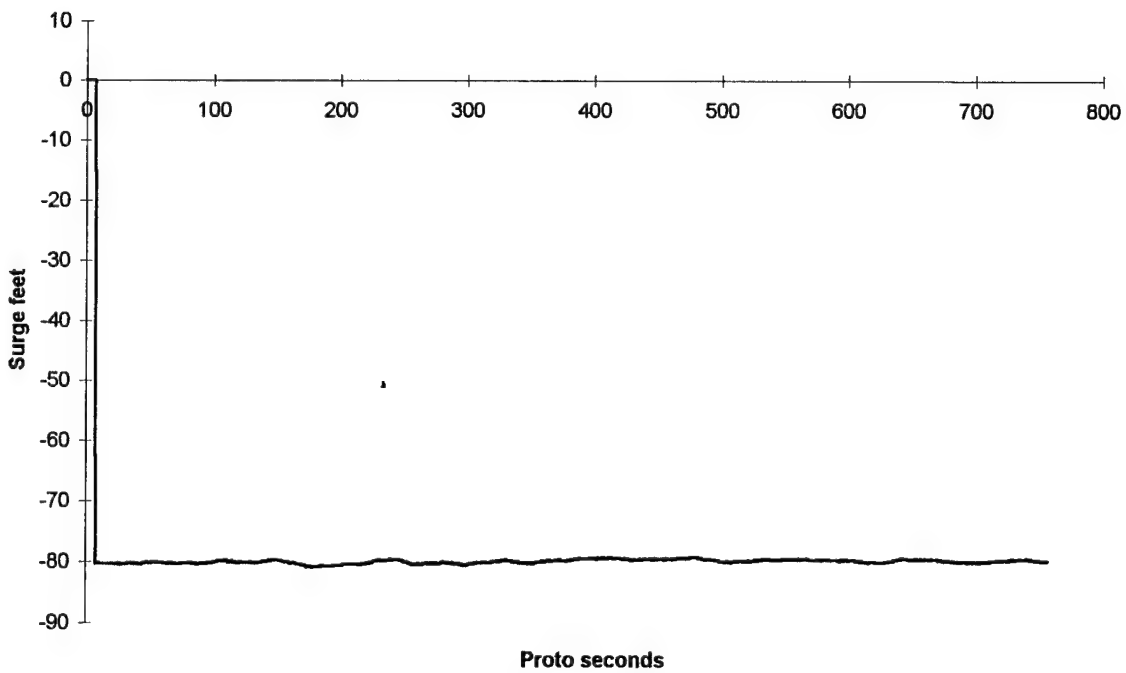
132 ML6



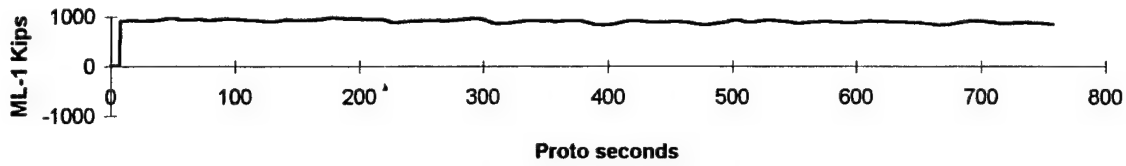
133 - Pitch



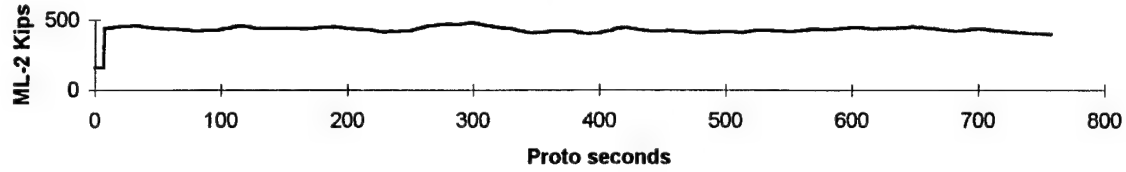
133 - Surge



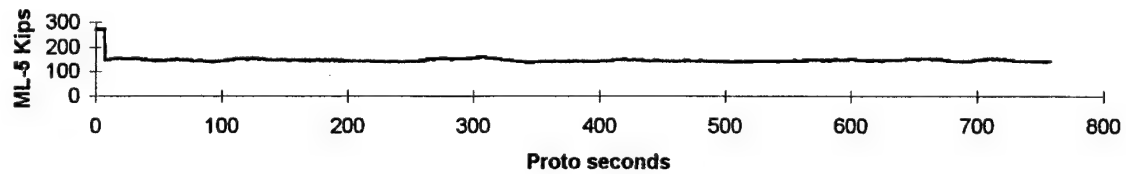
133 - ML1



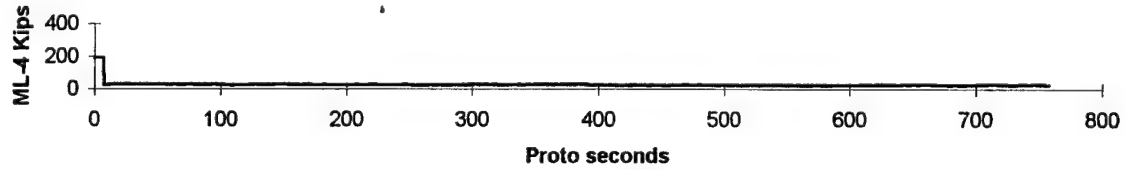
133 - ML 2



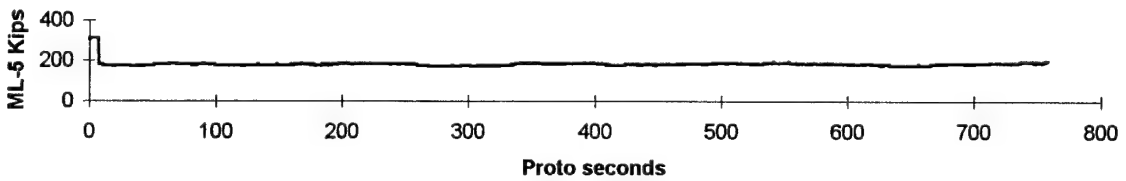
133 ML 3



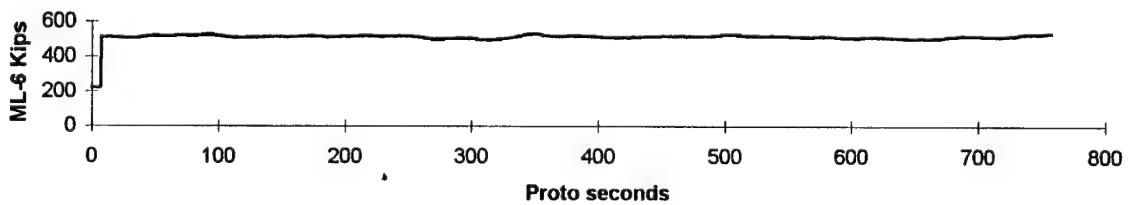
133 ML 4



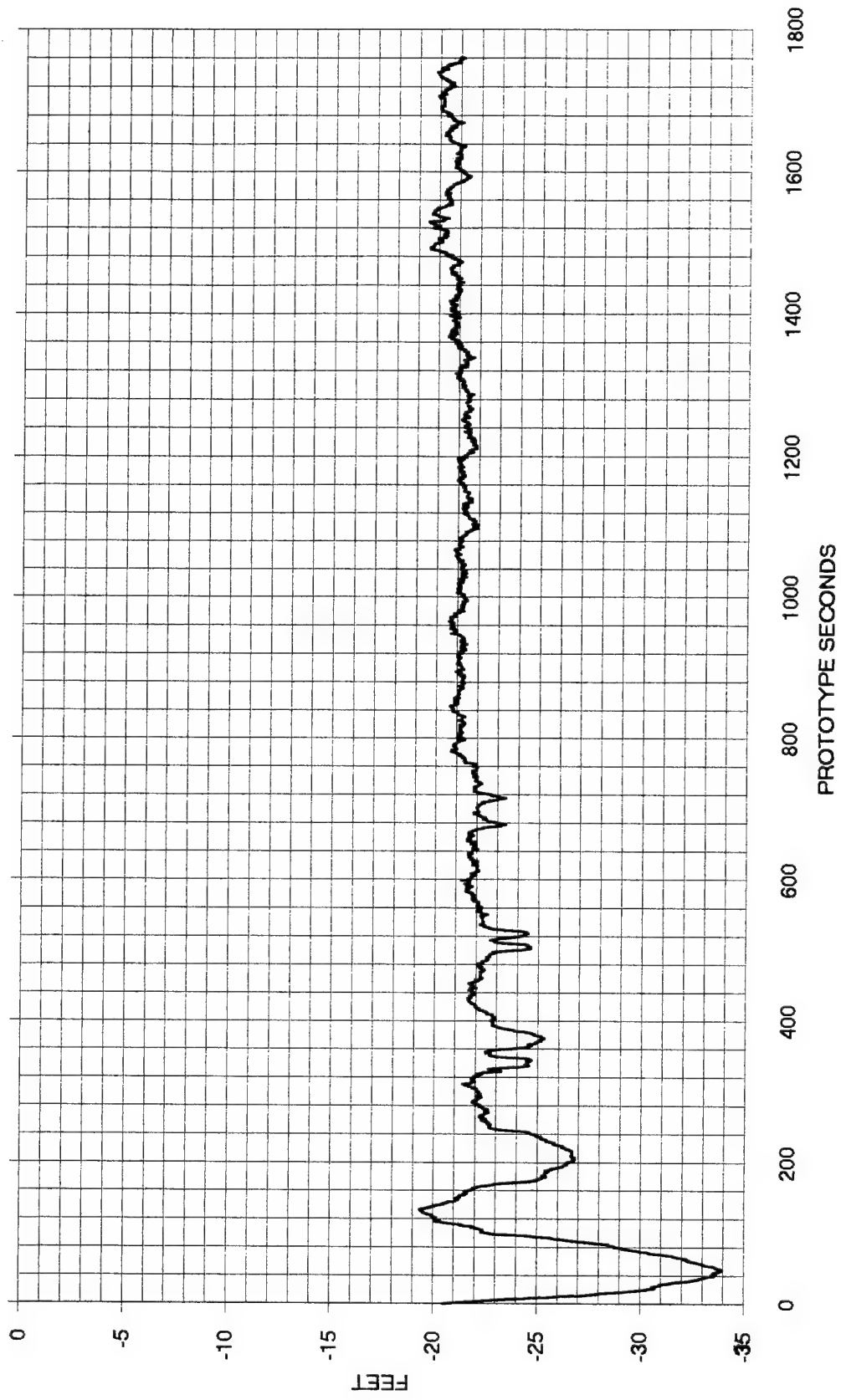
133 ML 5



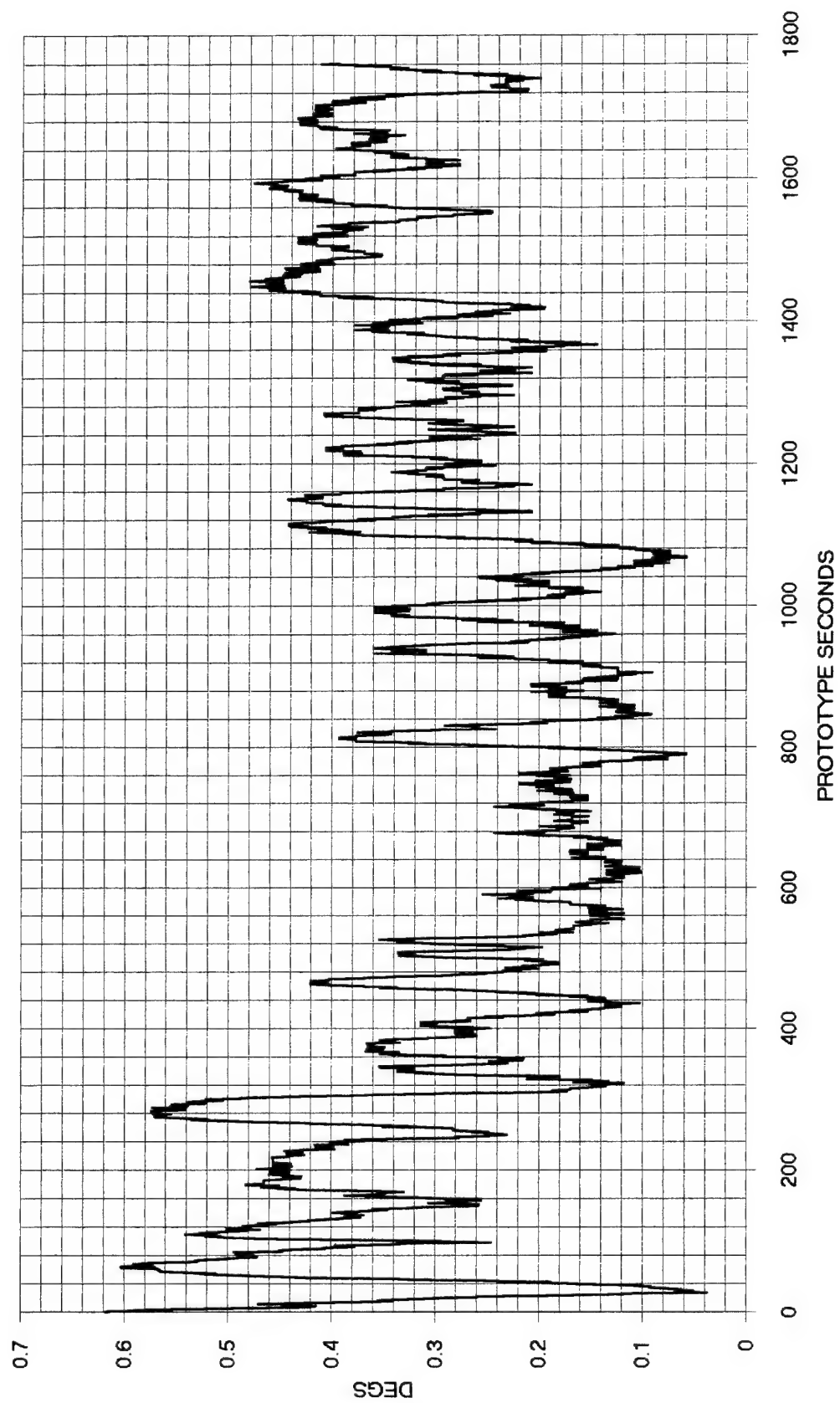
133 ML 6



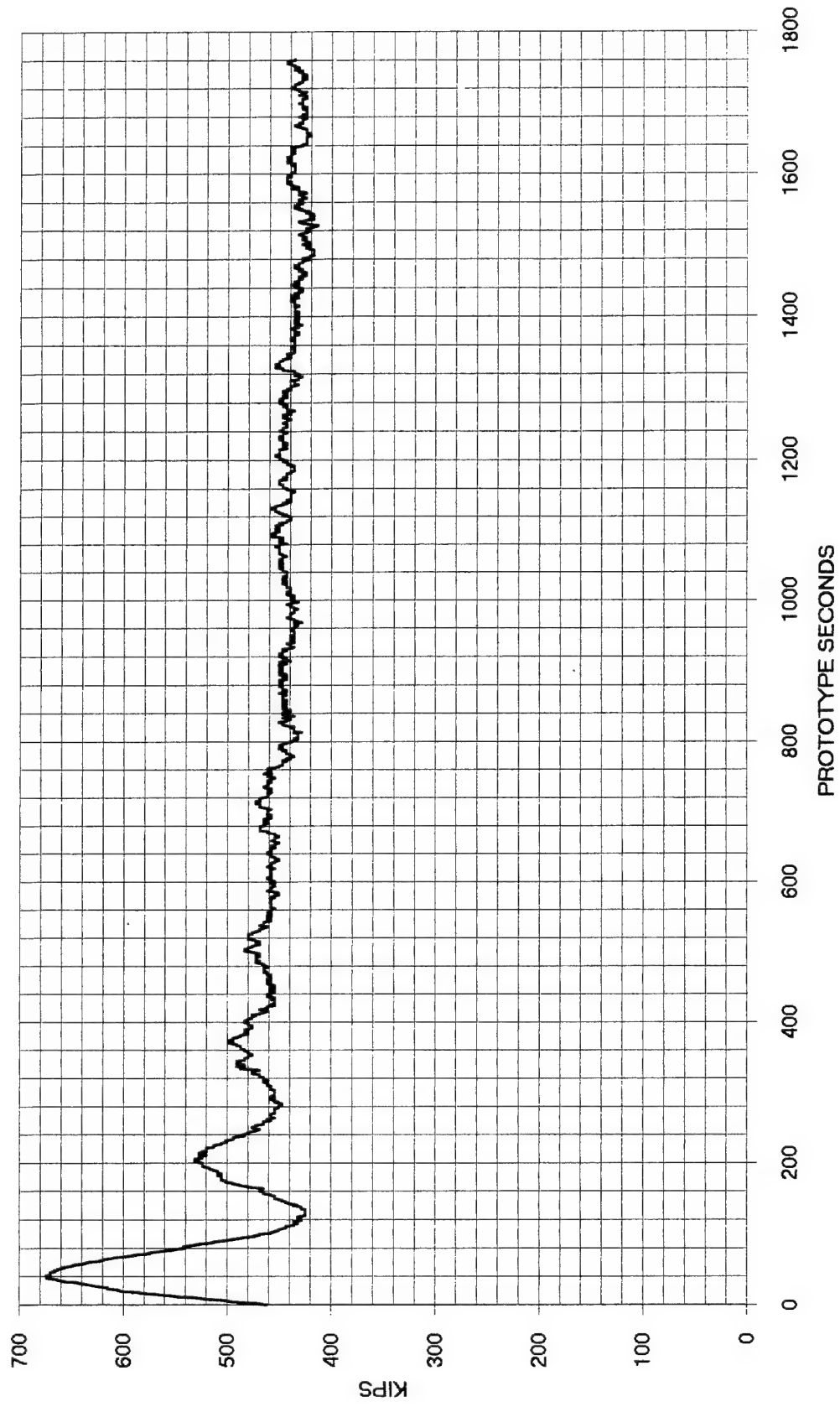
A568 - SURGE TOWING



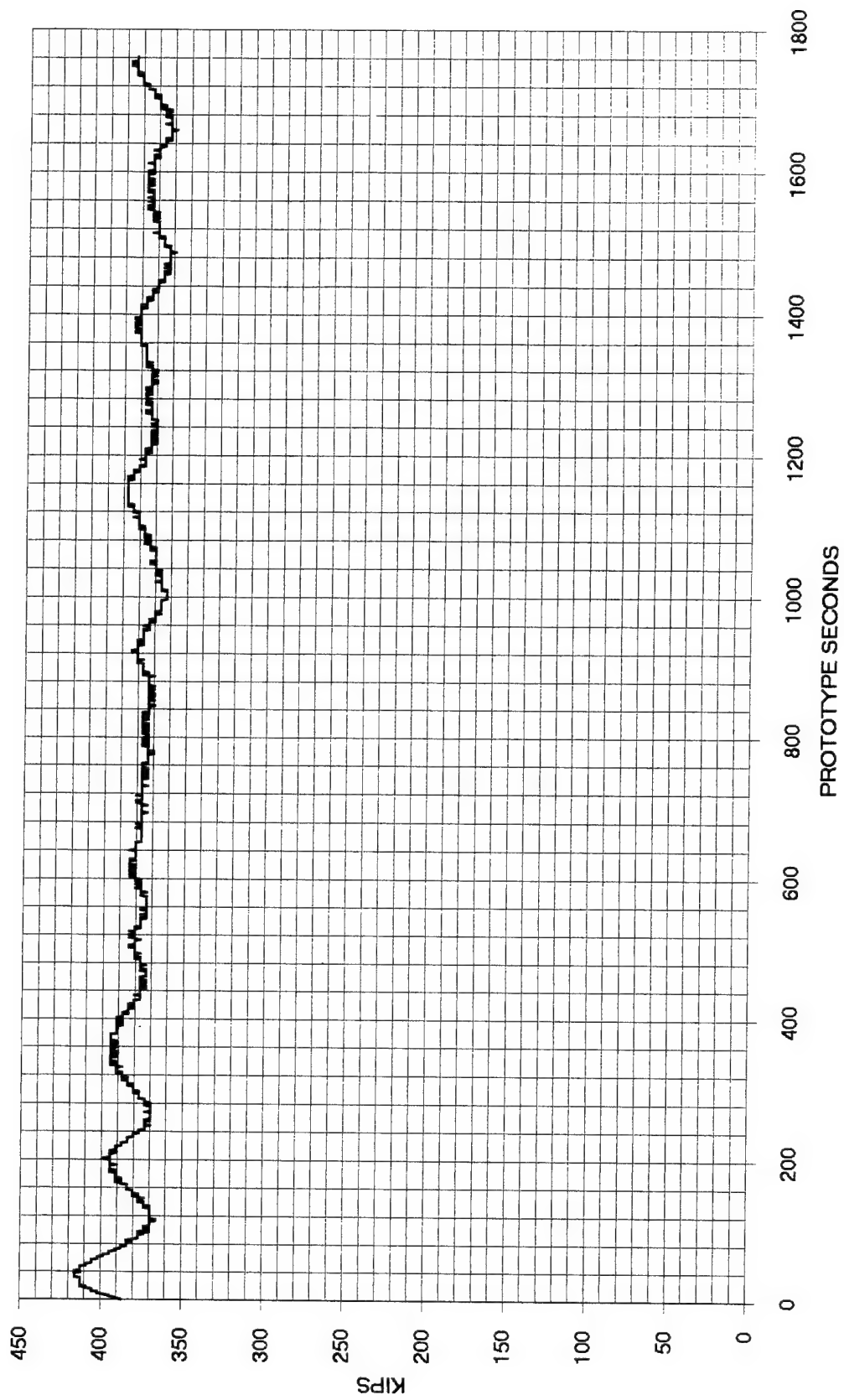
A568 - PITCH TOWING



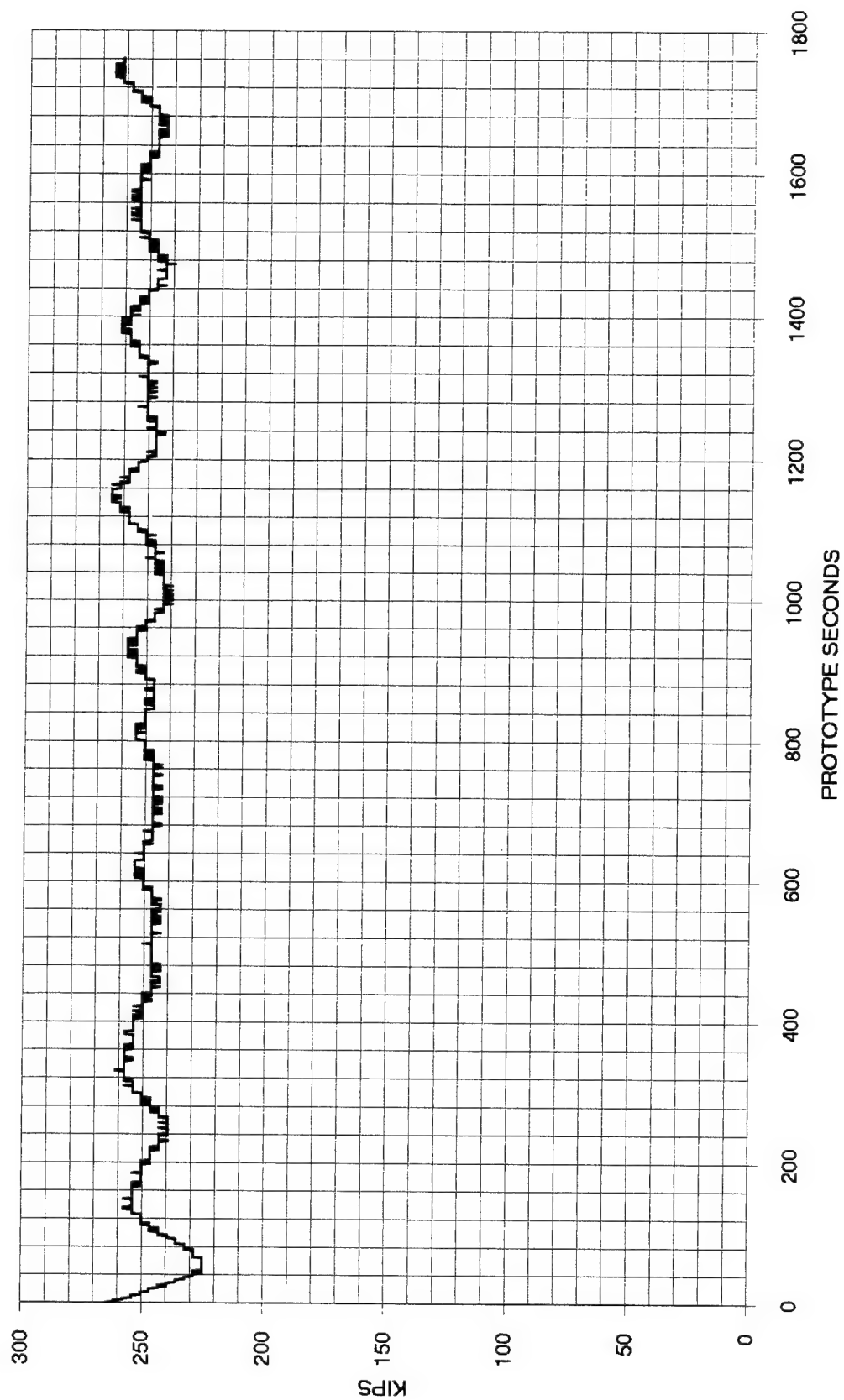
A568-ML-1 TOWING



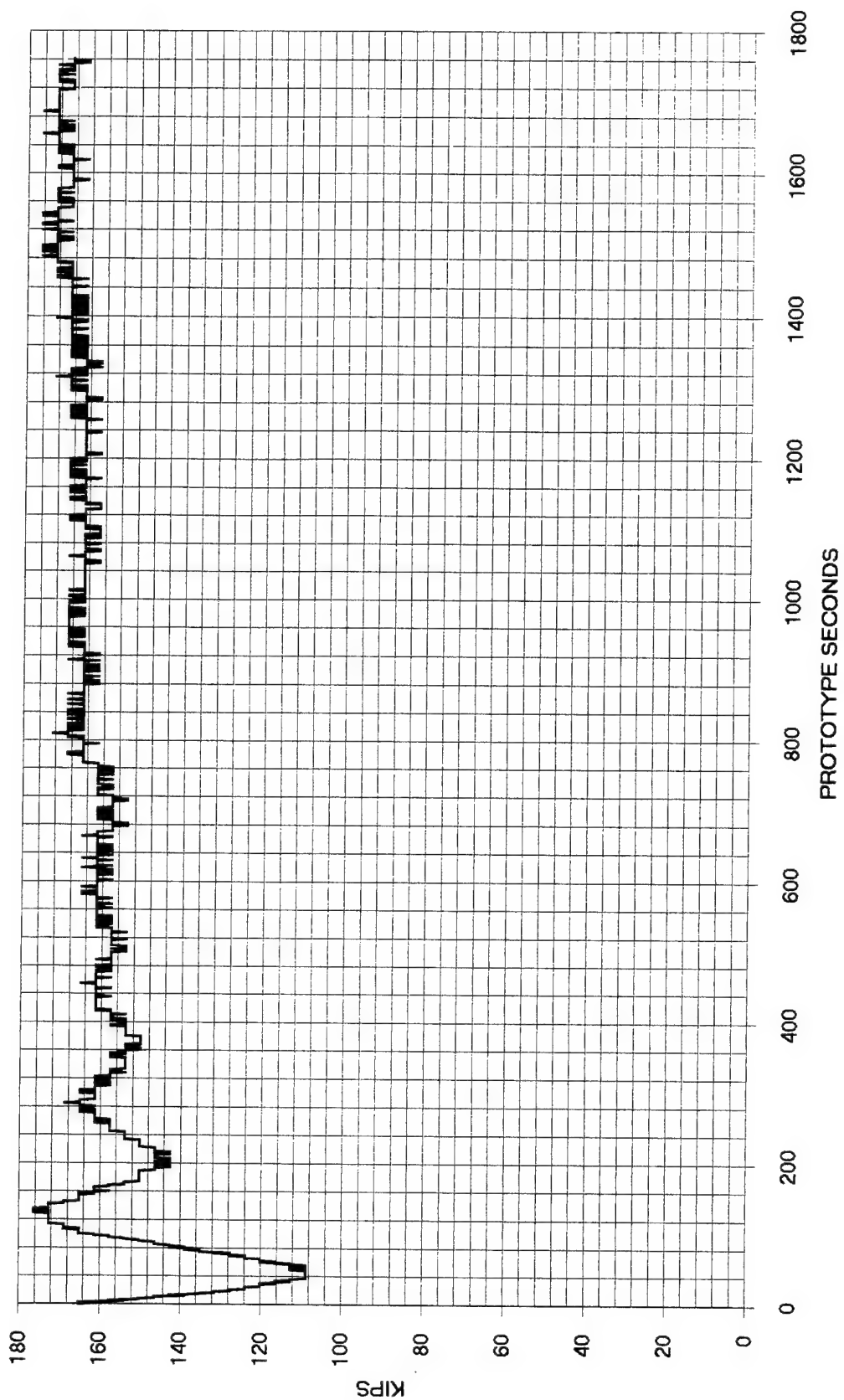
A568 - ML-2 TOWING



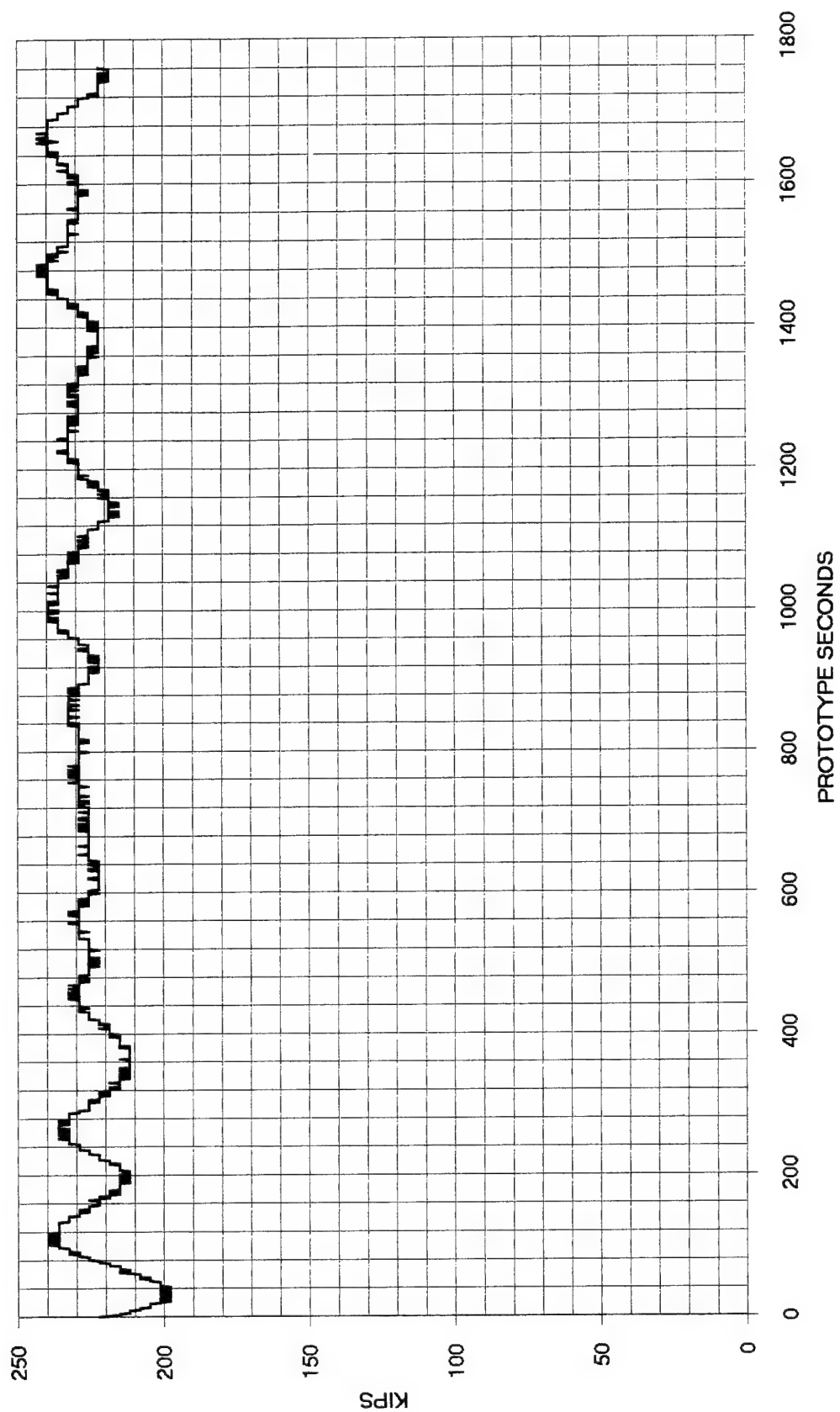
A568 - ML-3 TOWING



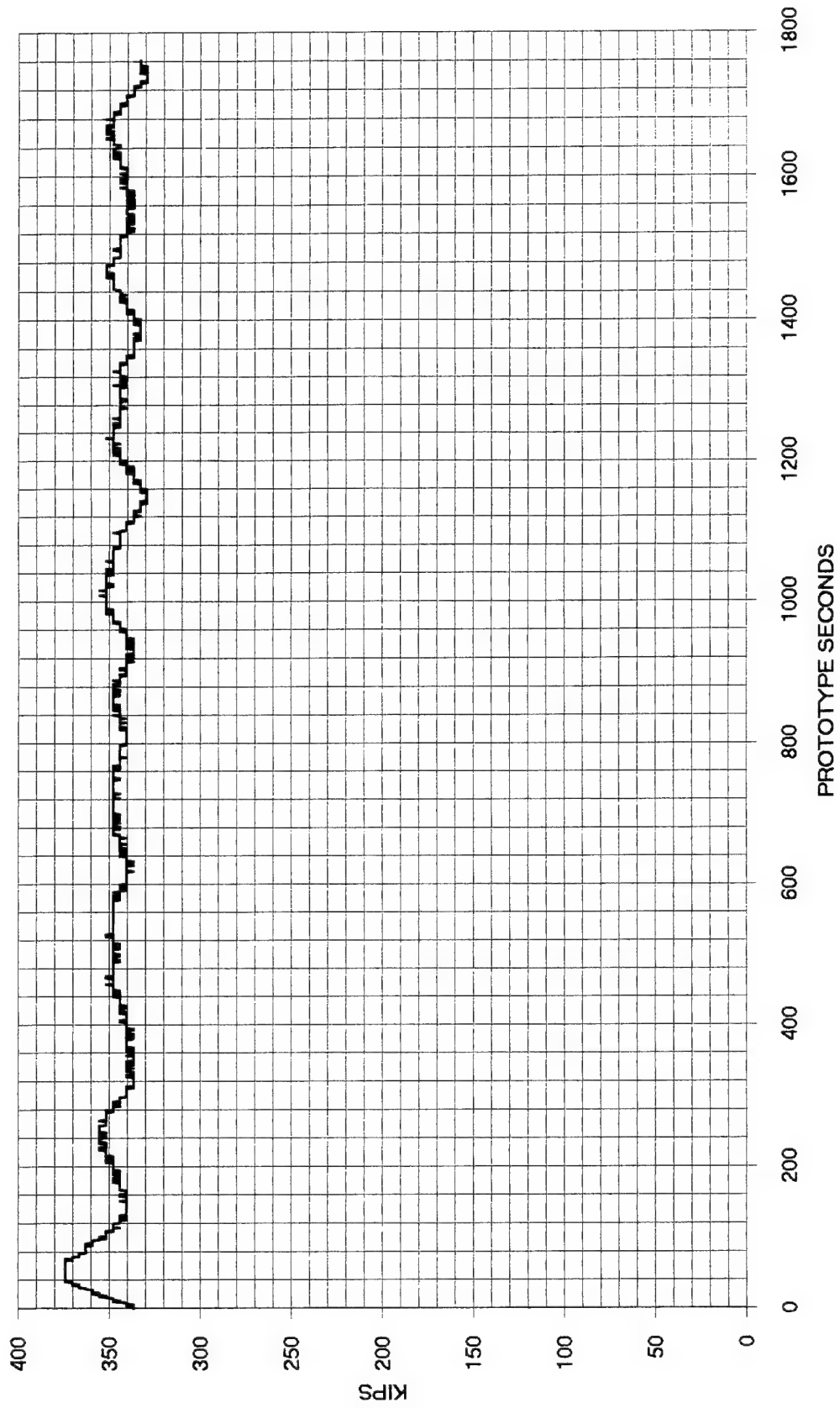
A568 - ML-4 TOWING



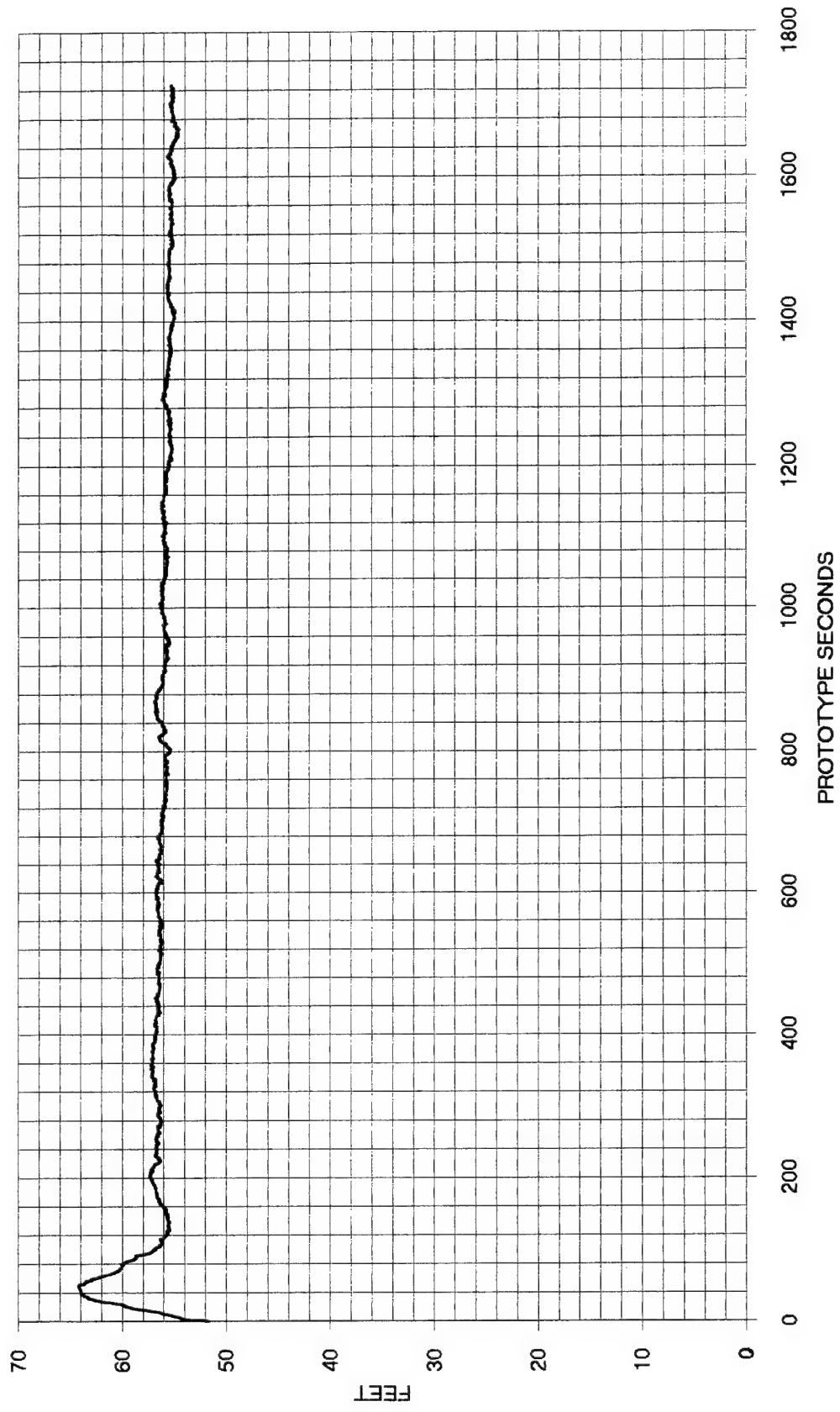
A568 - ML-5 TOWING



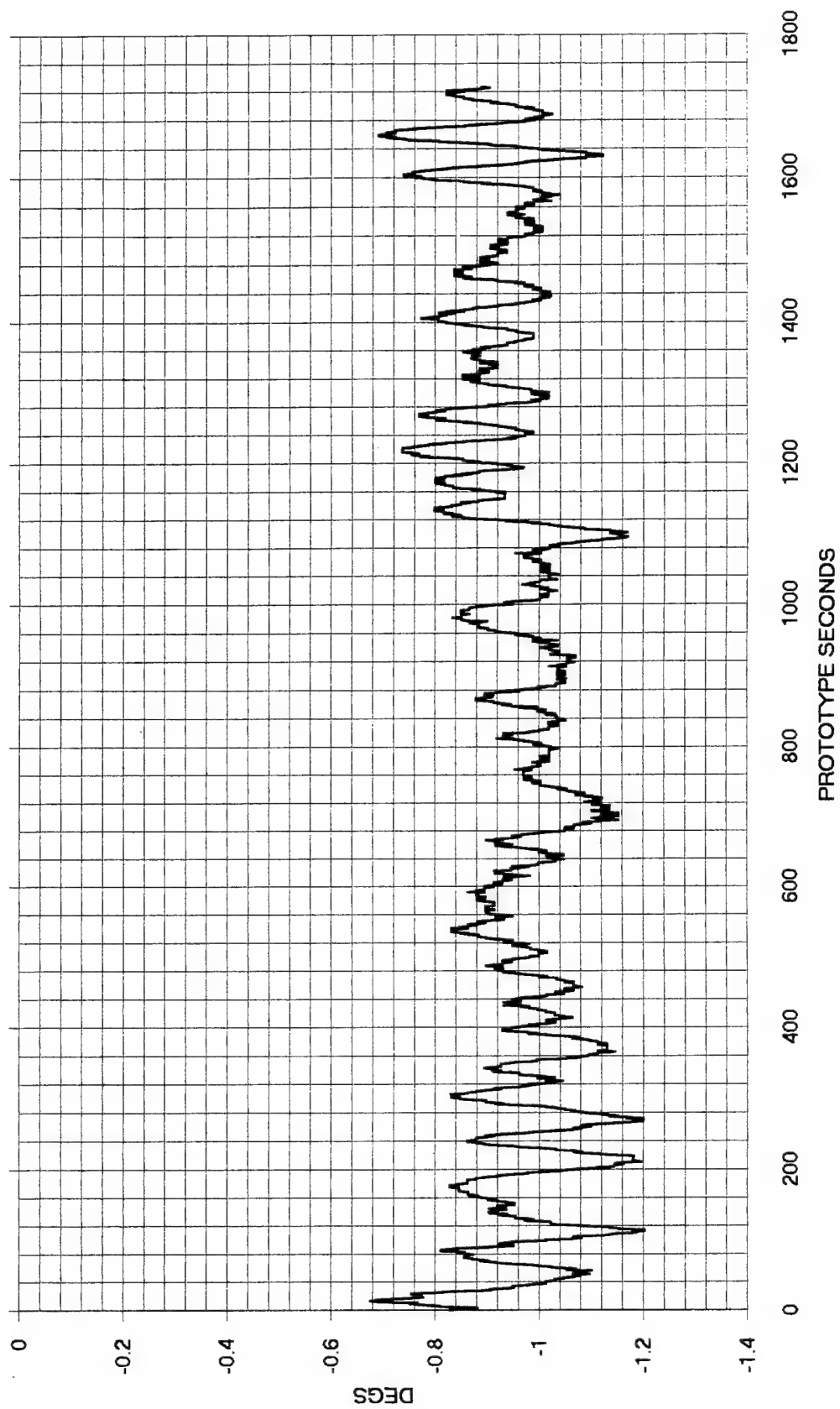
A568 - ML-6 TOWING



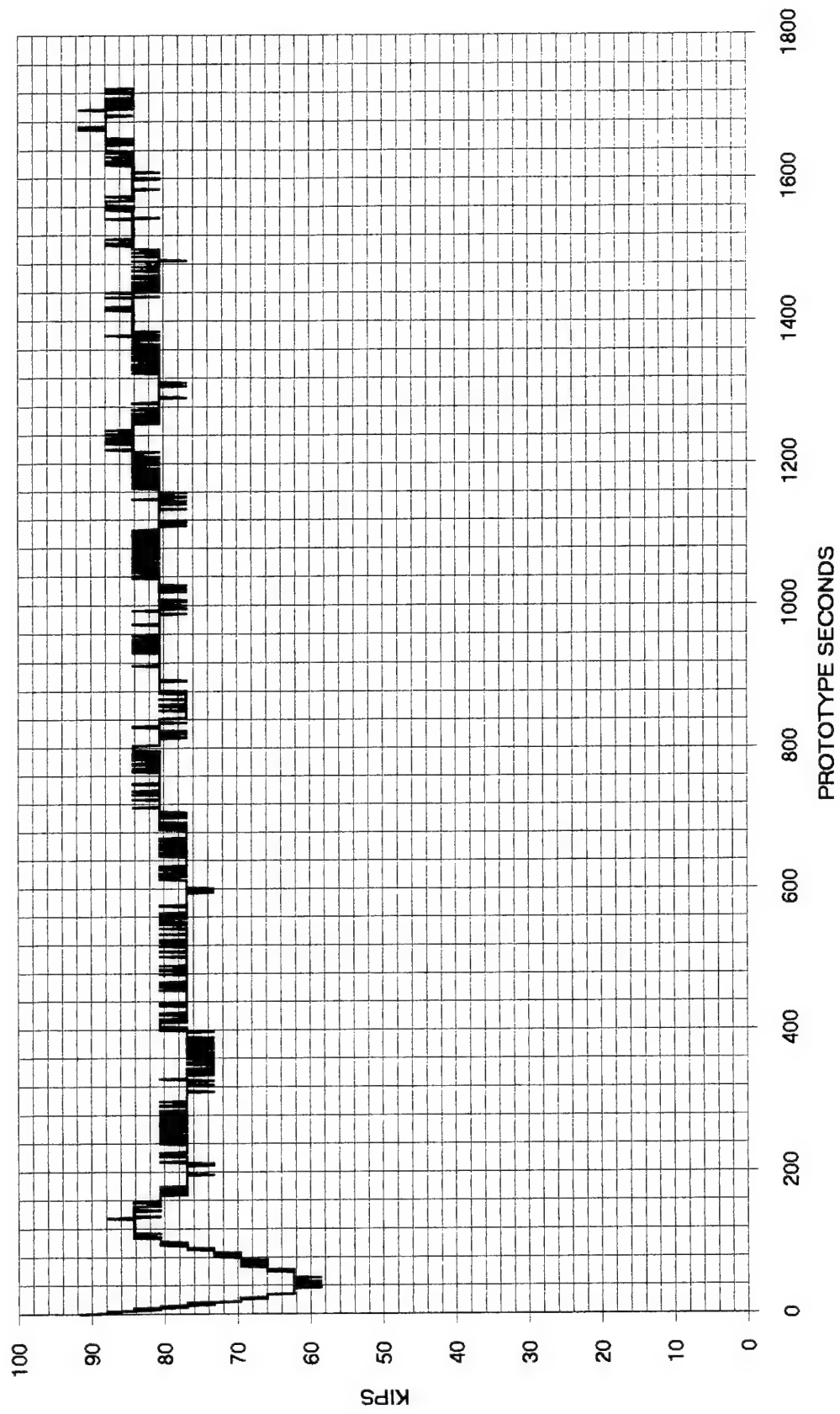
A569 - SURGE TOWING



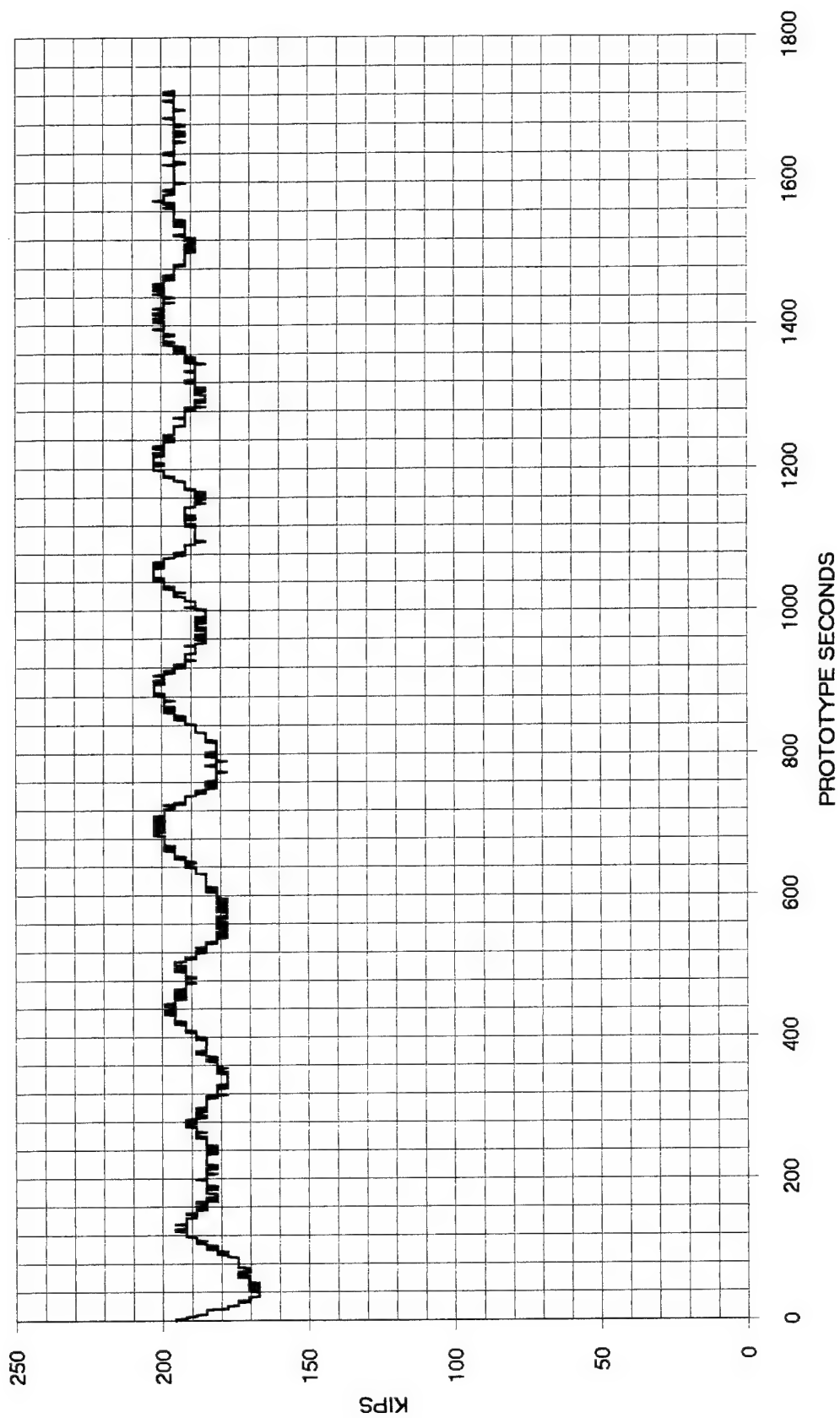
A569 - PITCH TOWING



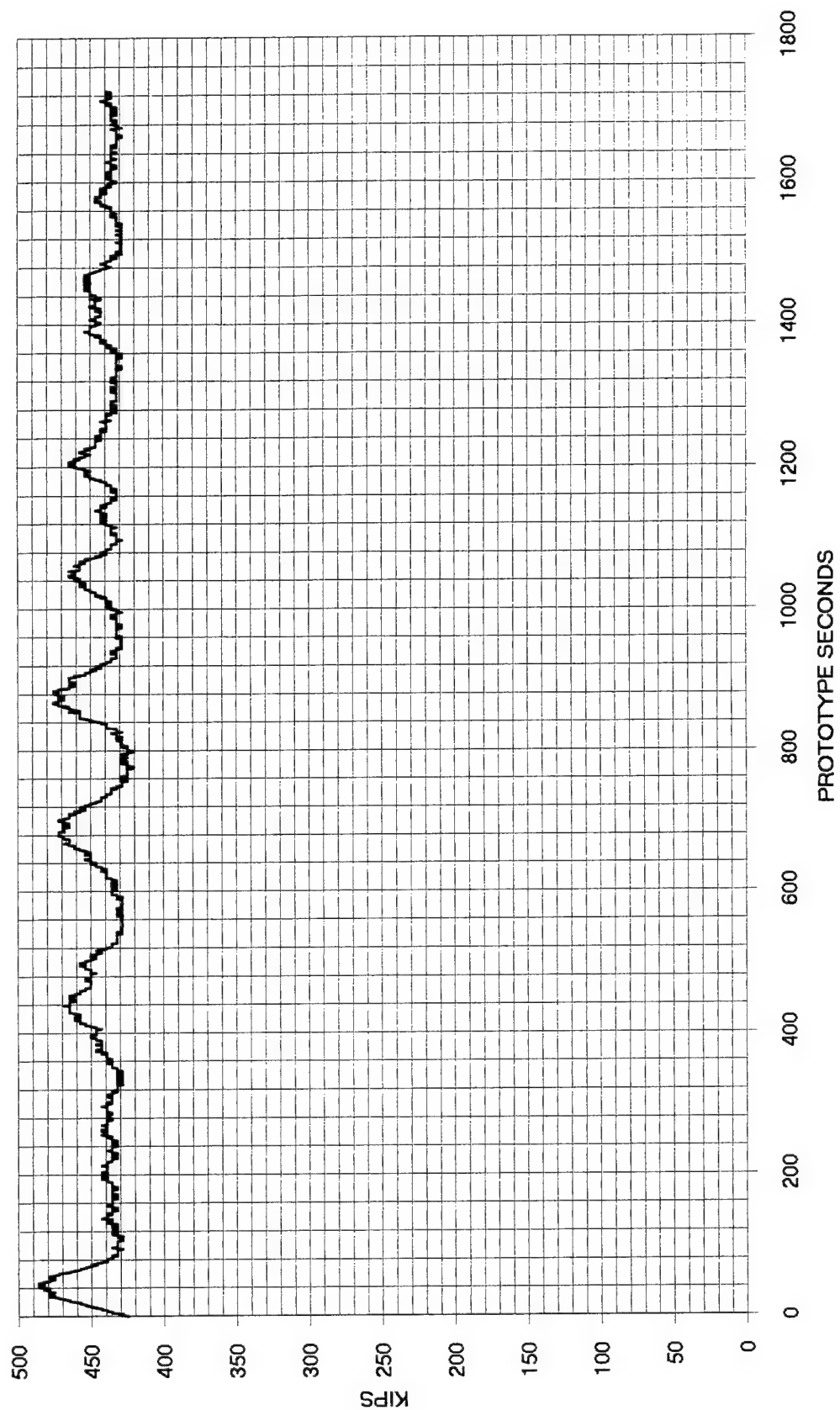
A569 - ML-1 TOWING



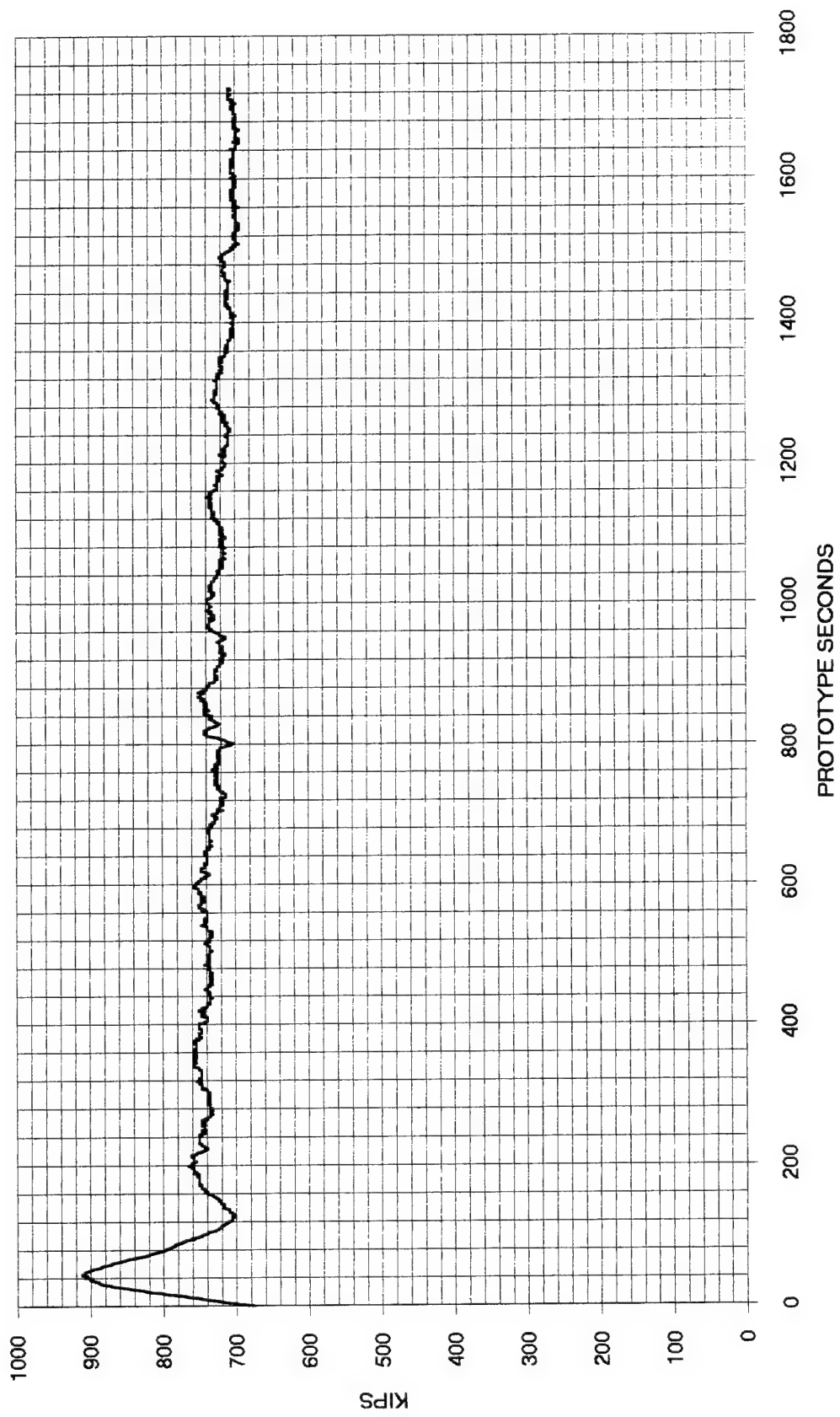
A569 - ML-2 TOWING



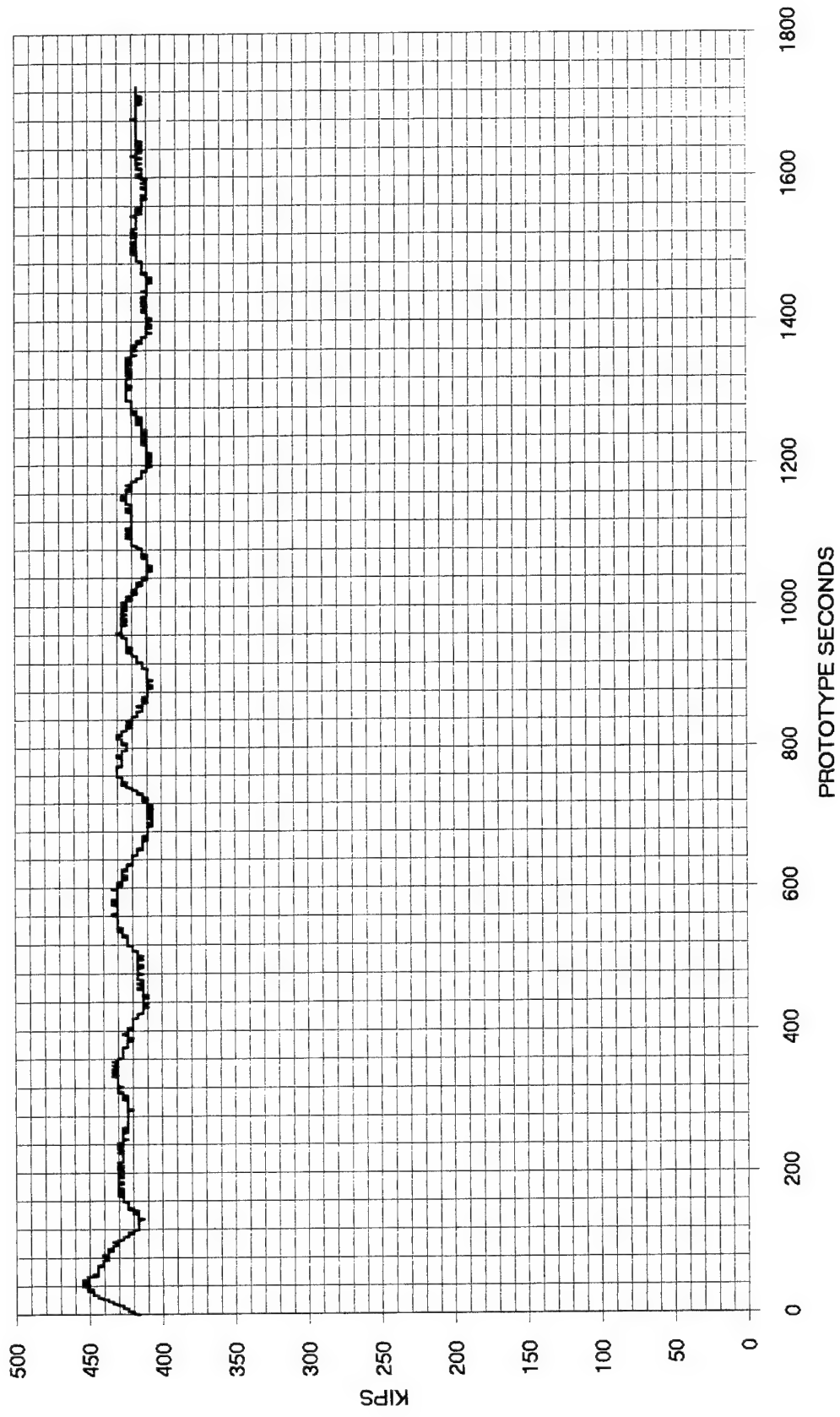
A569 - ML-3 TOWING



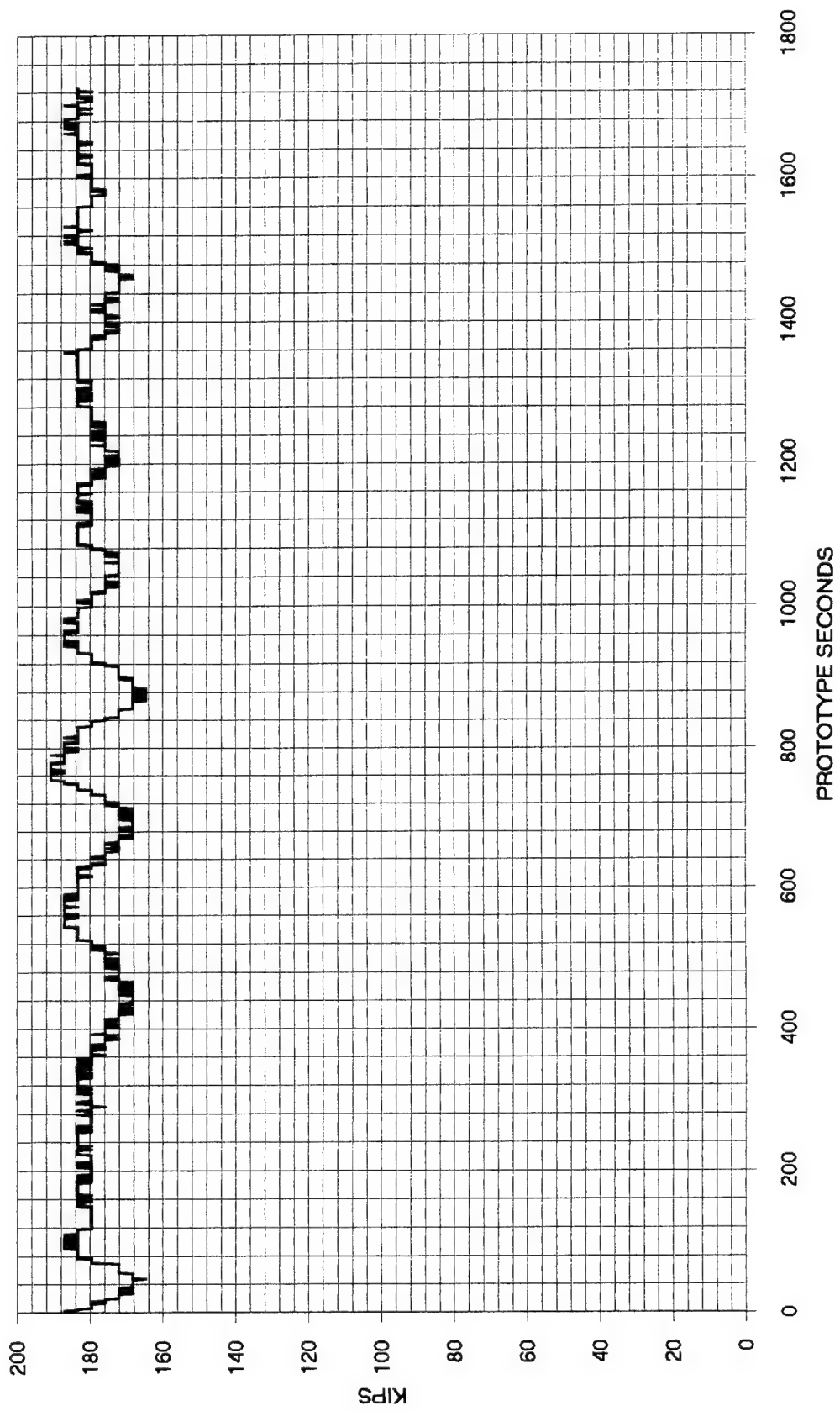
A569 - ML-4 TOWING



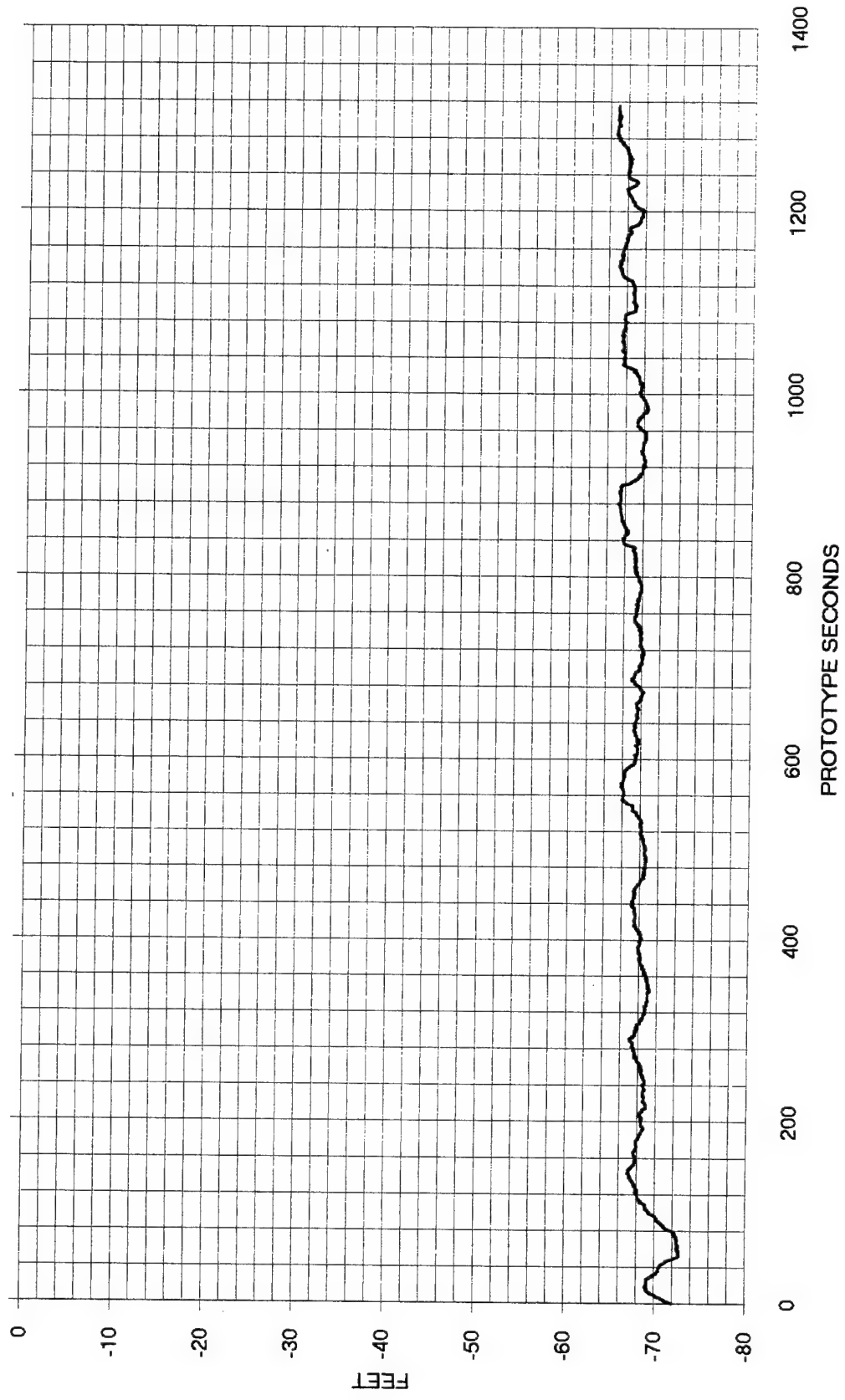
A569 - ML-5 TOWING



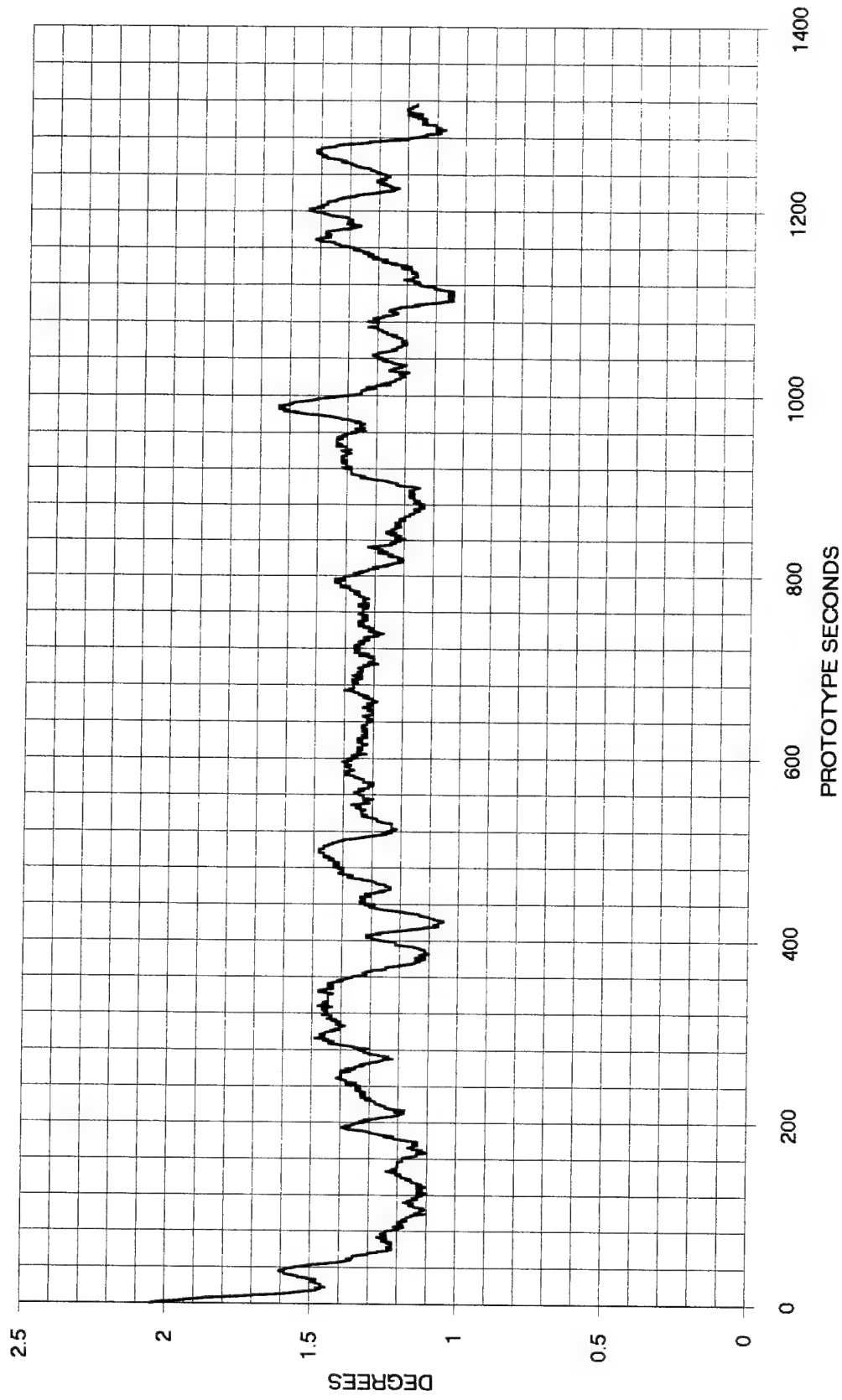
A569 - ML-6 TOWING



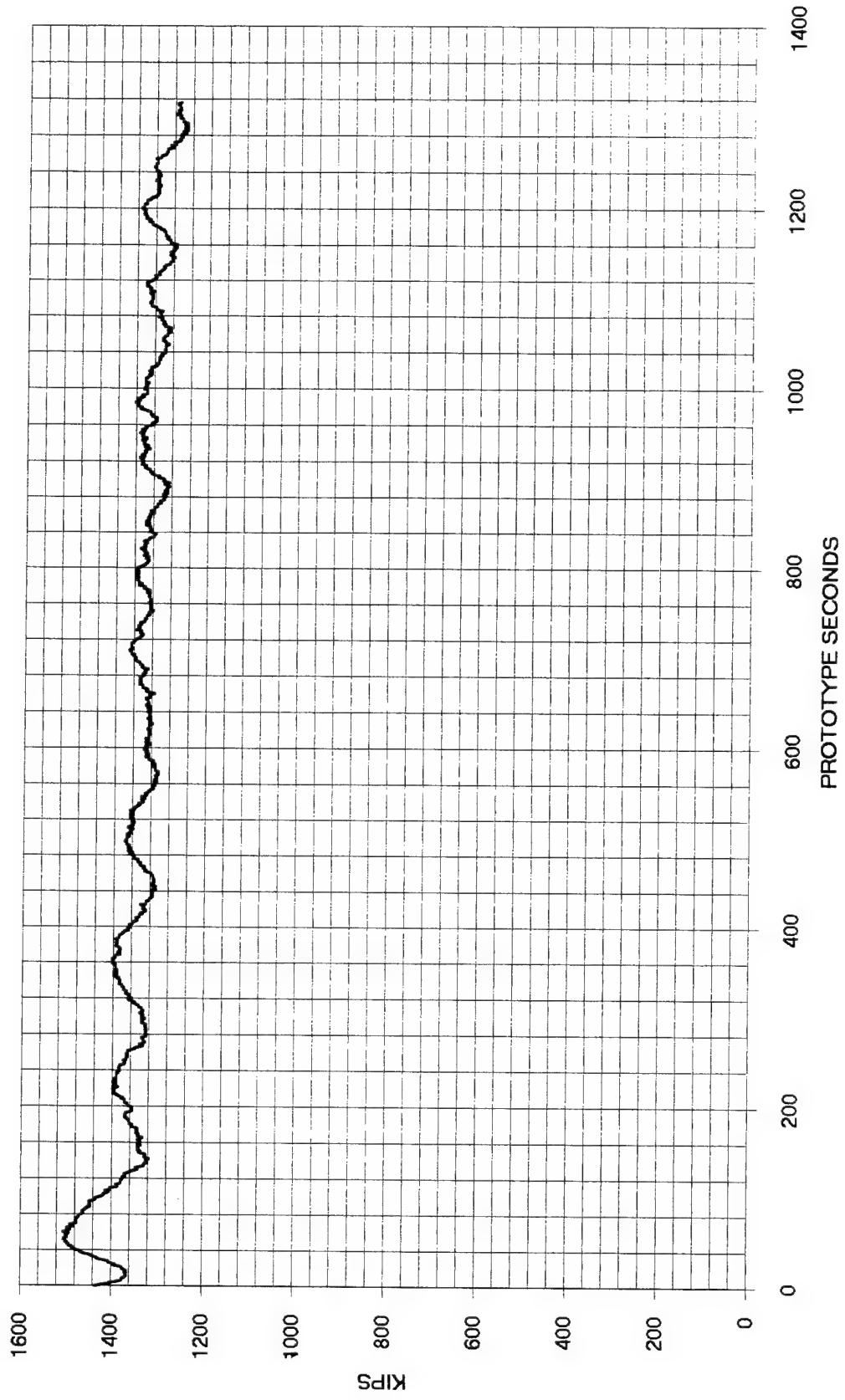
A570 - SURGE TOWING



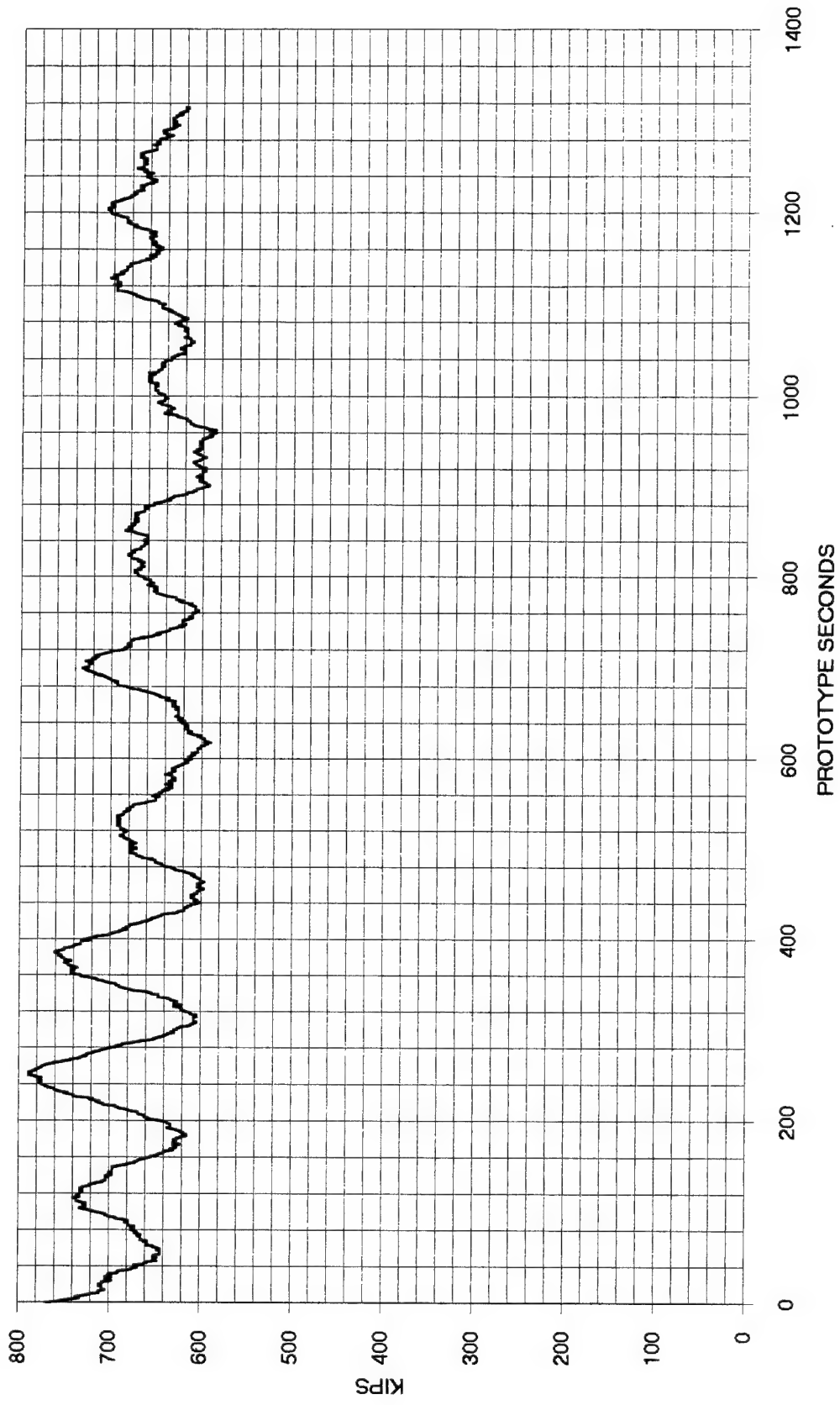
A570 - PITCH TOWING



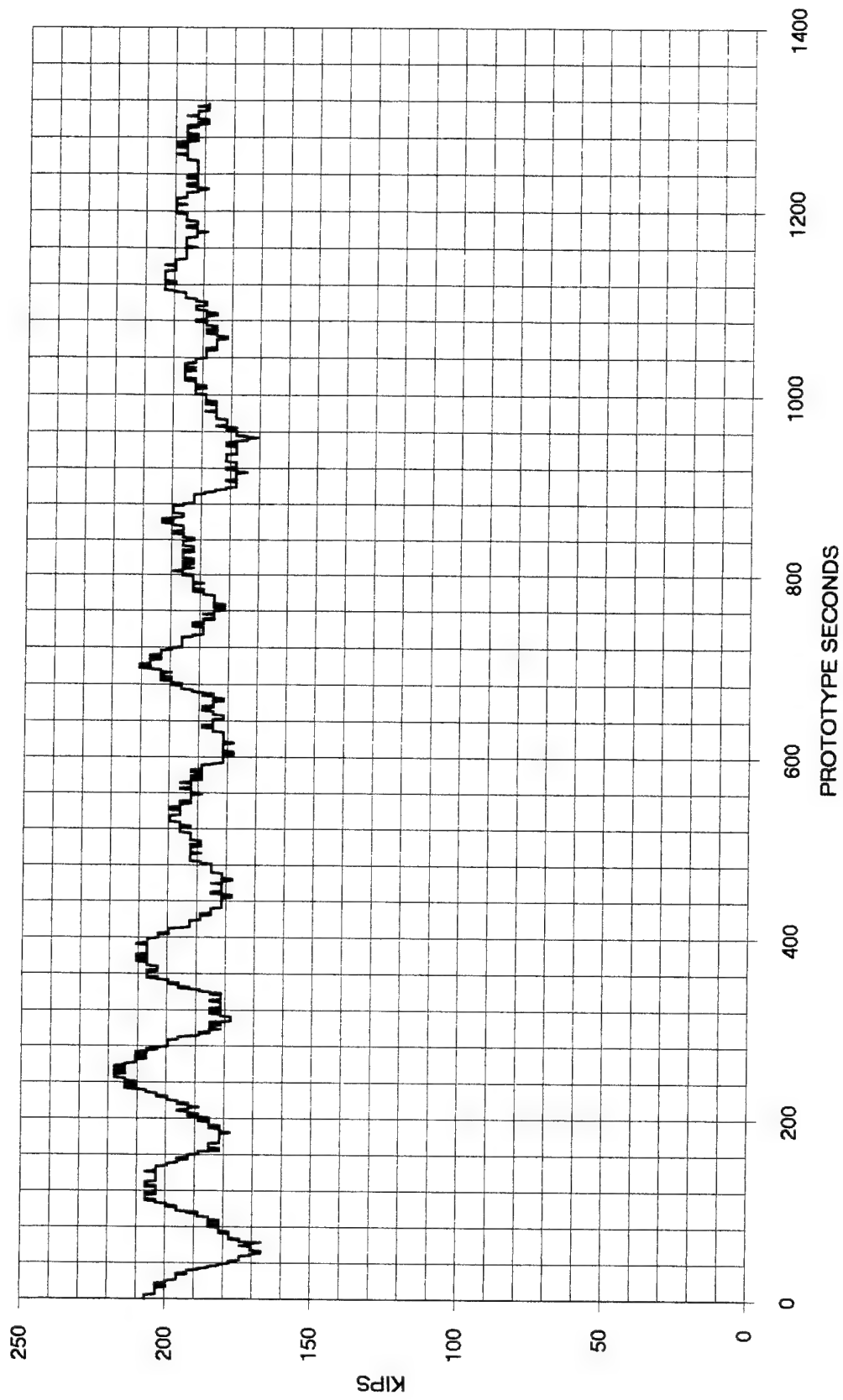
A570 - ML-1 TOWING



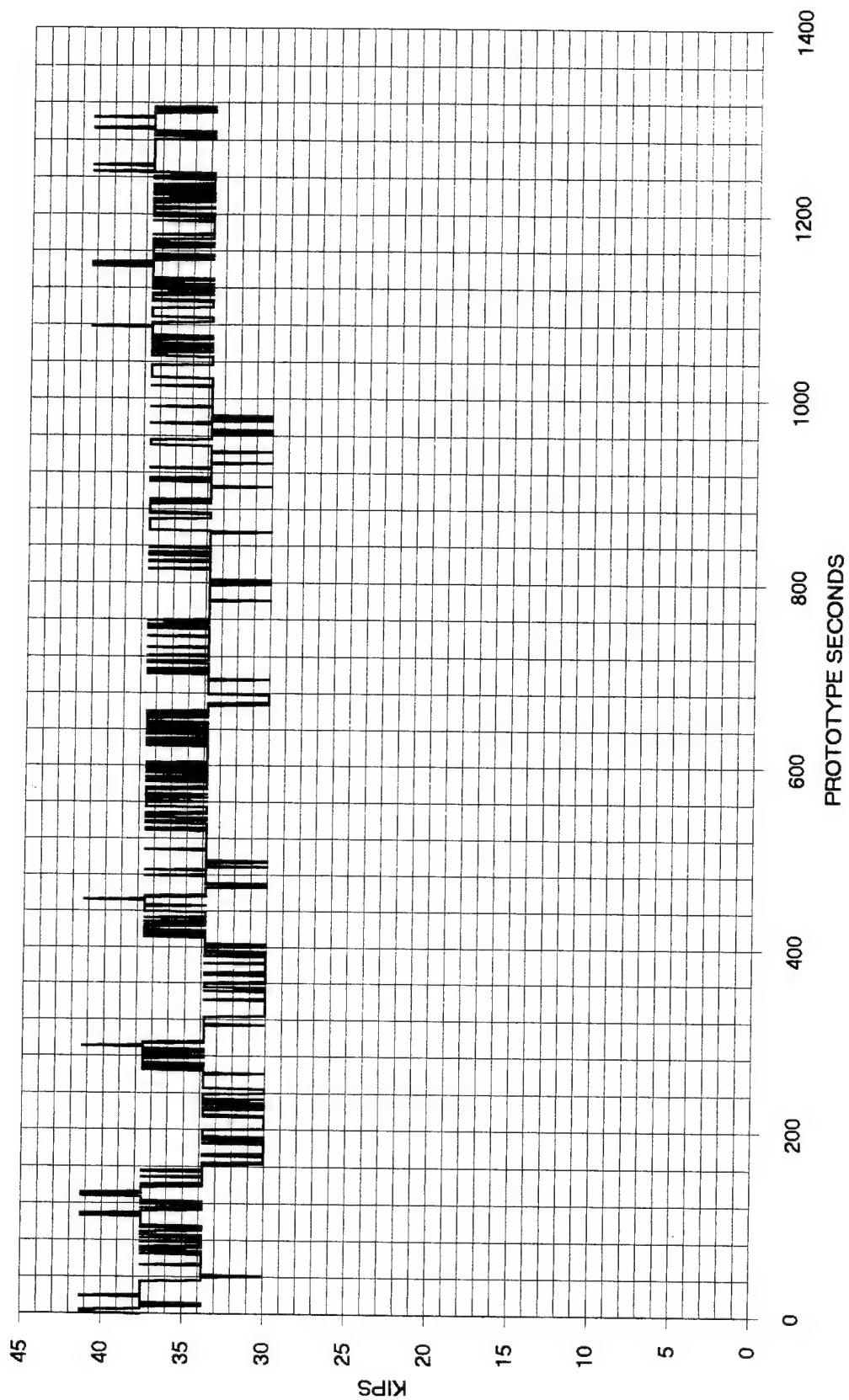
A570 ML-2 TOWING



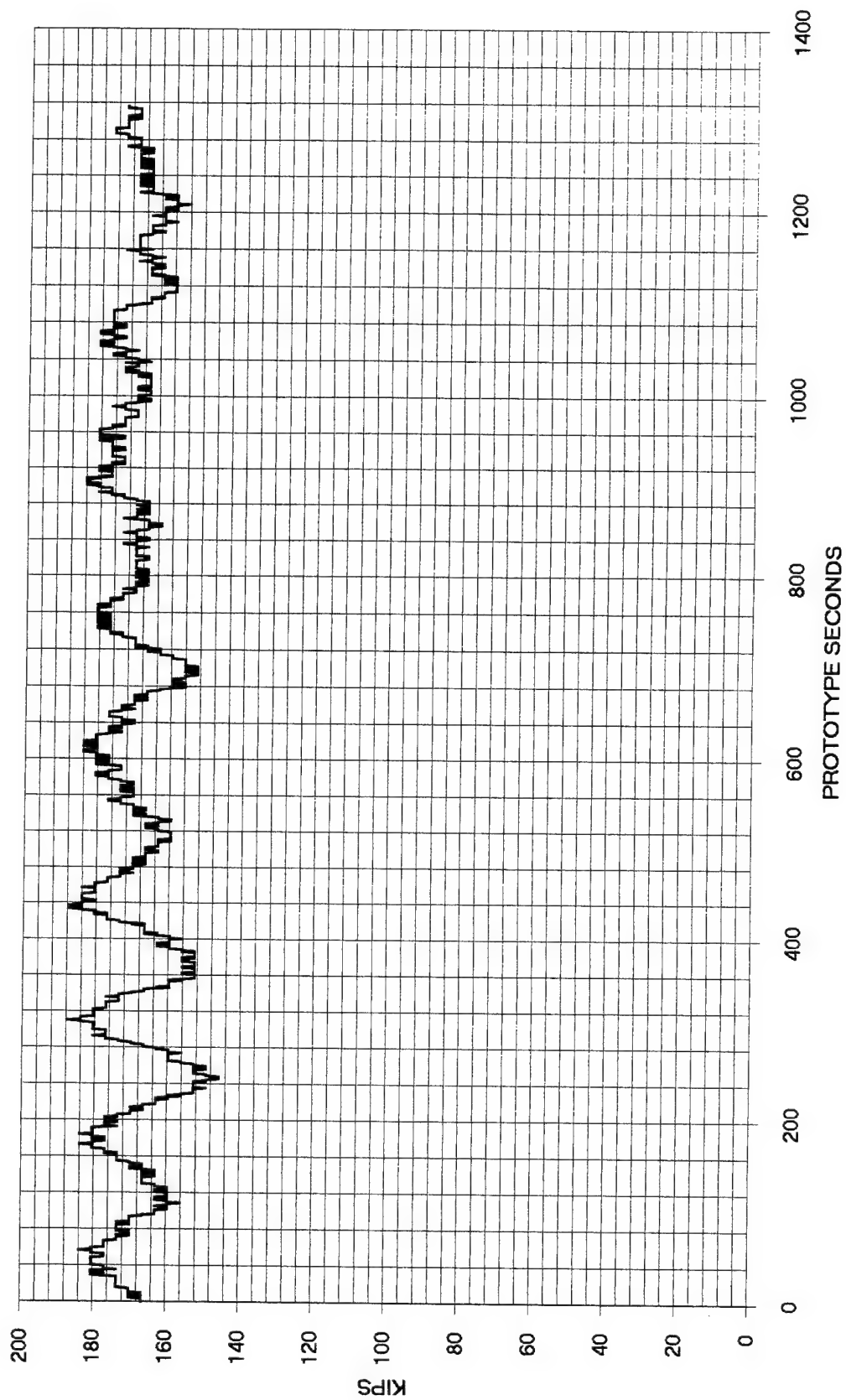
A570 - ML-3 TOWING



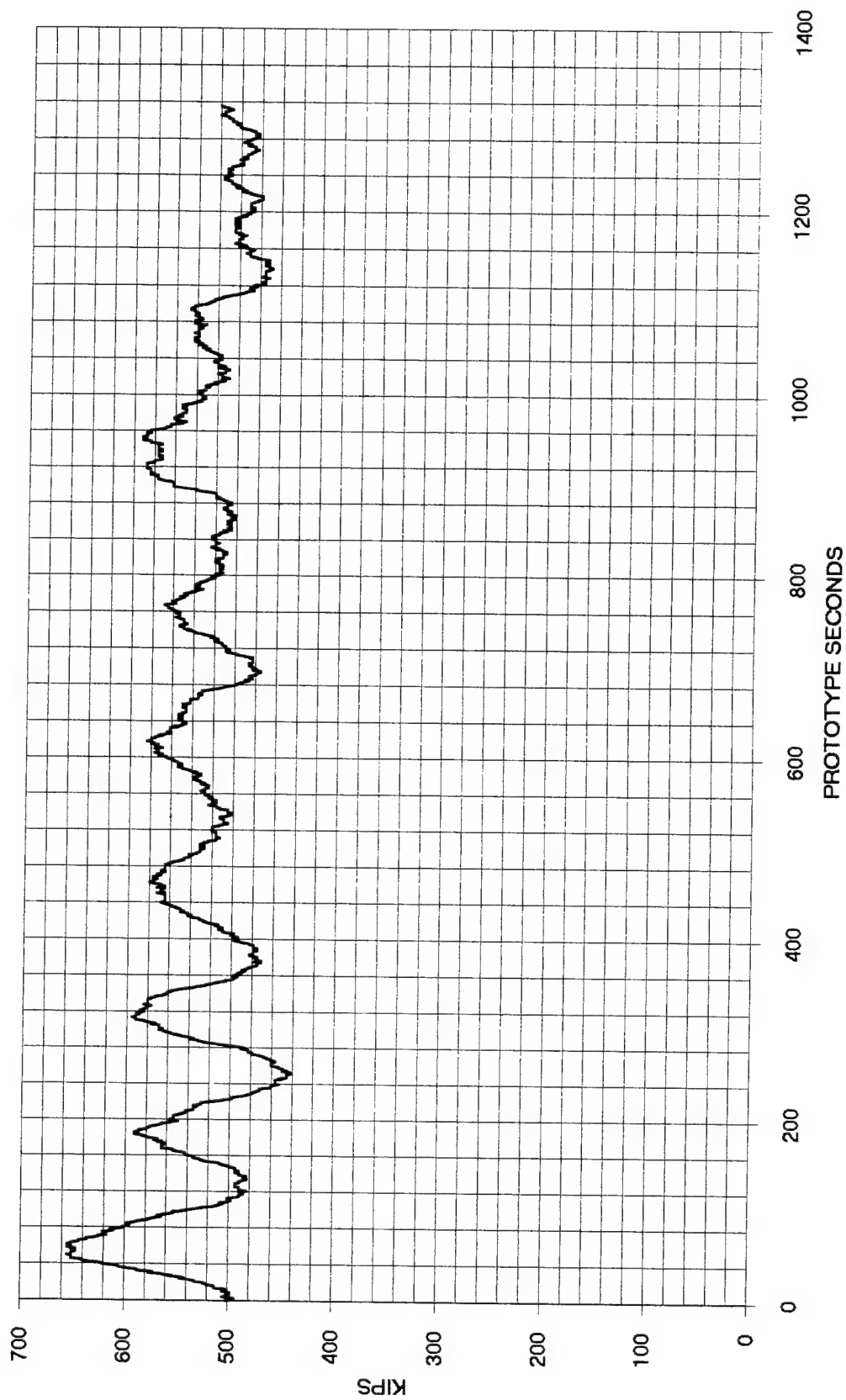
A570 - ML-4 TOWING



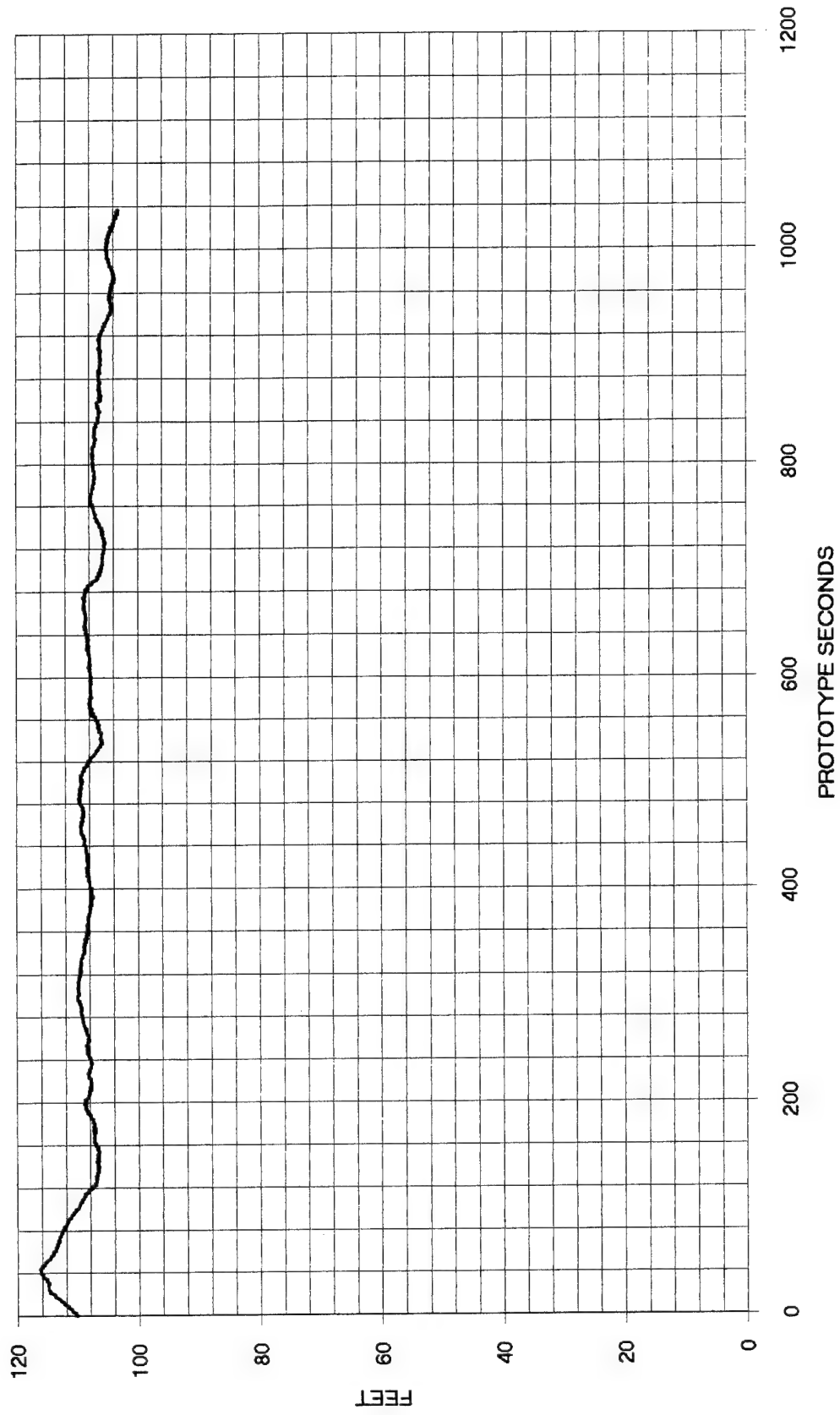
A570 - ML-5 TOWING



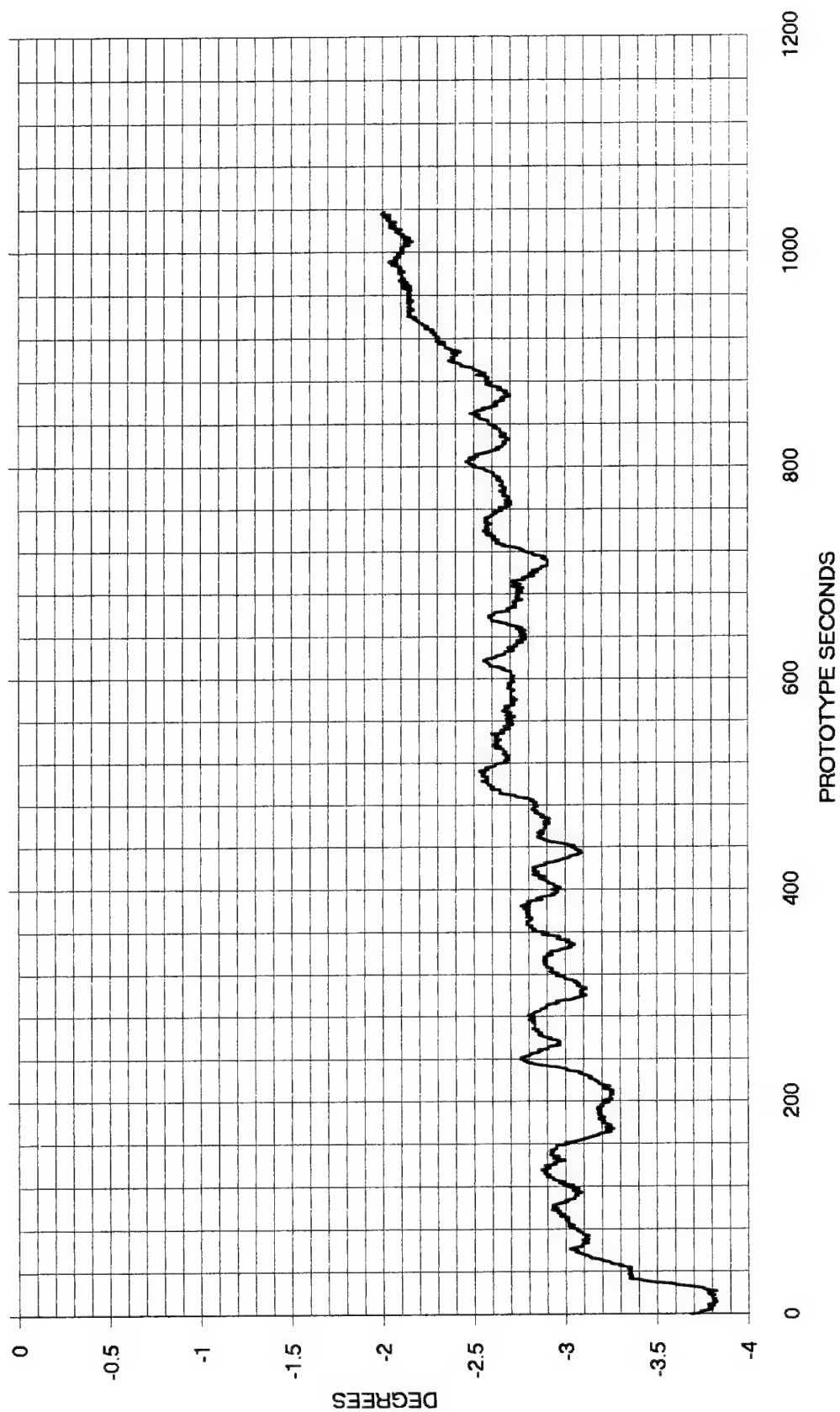
A570 - ML-6 TOWING



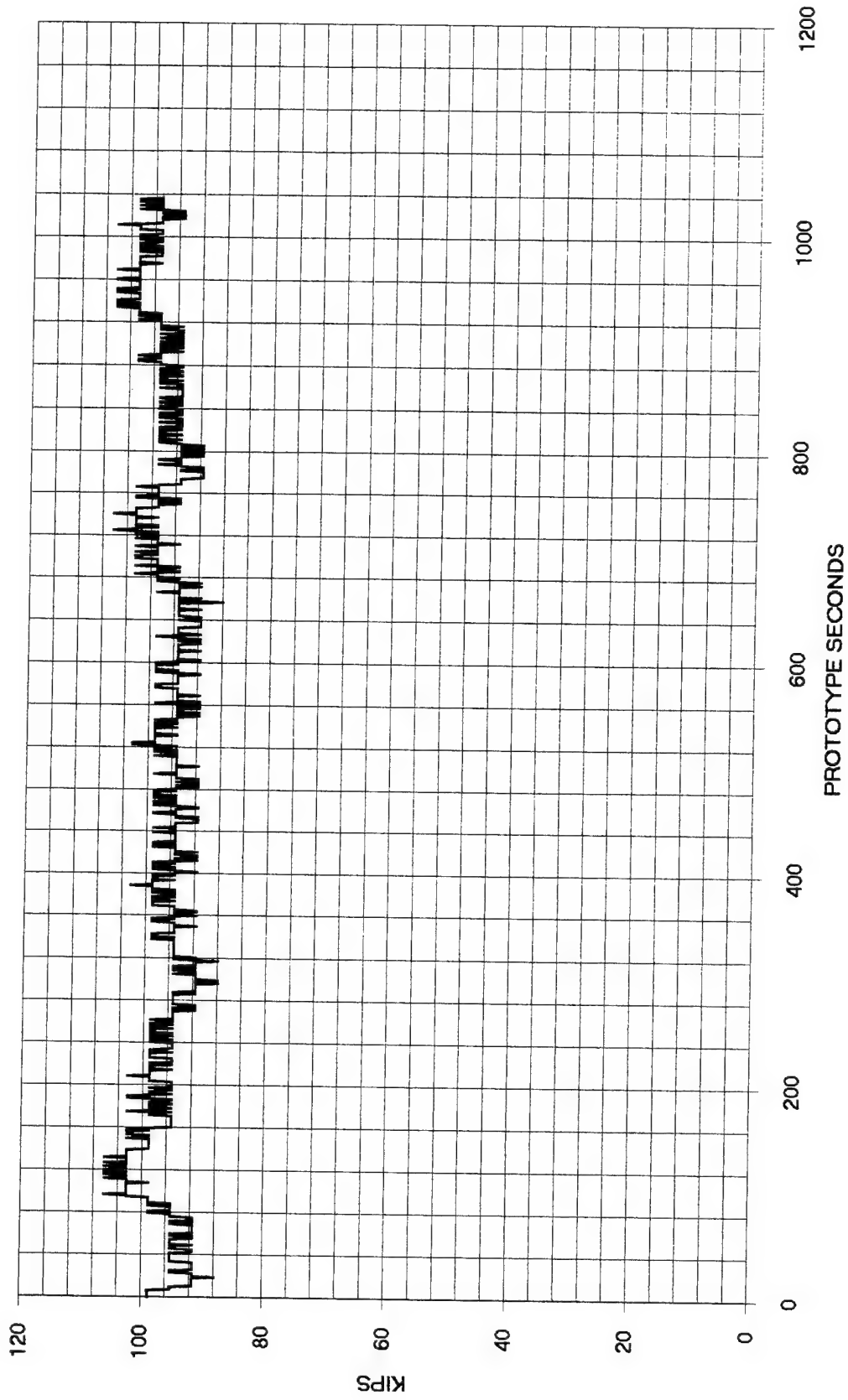
A571 - SURGE TOWING



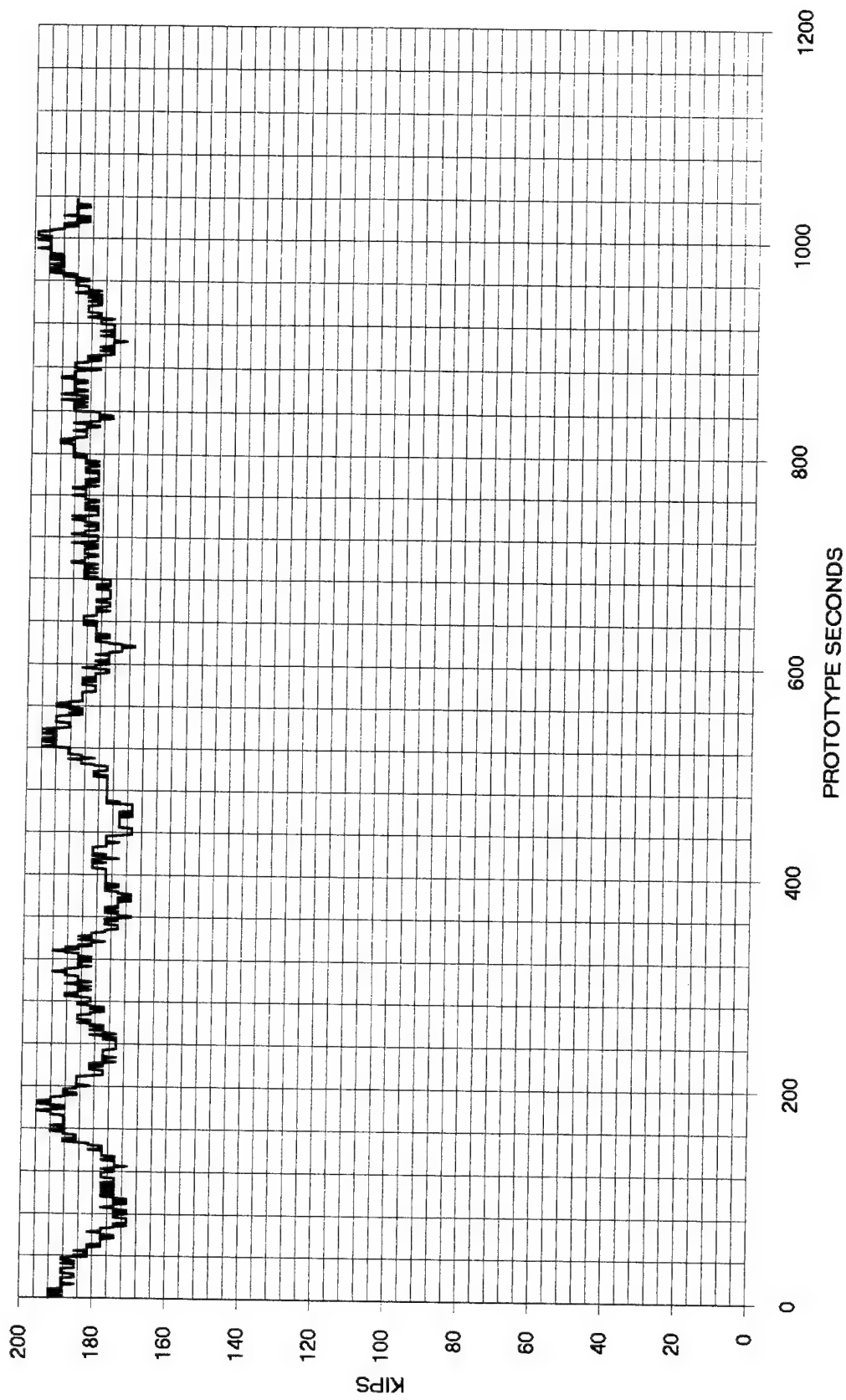
A571 - PITCH TOWING



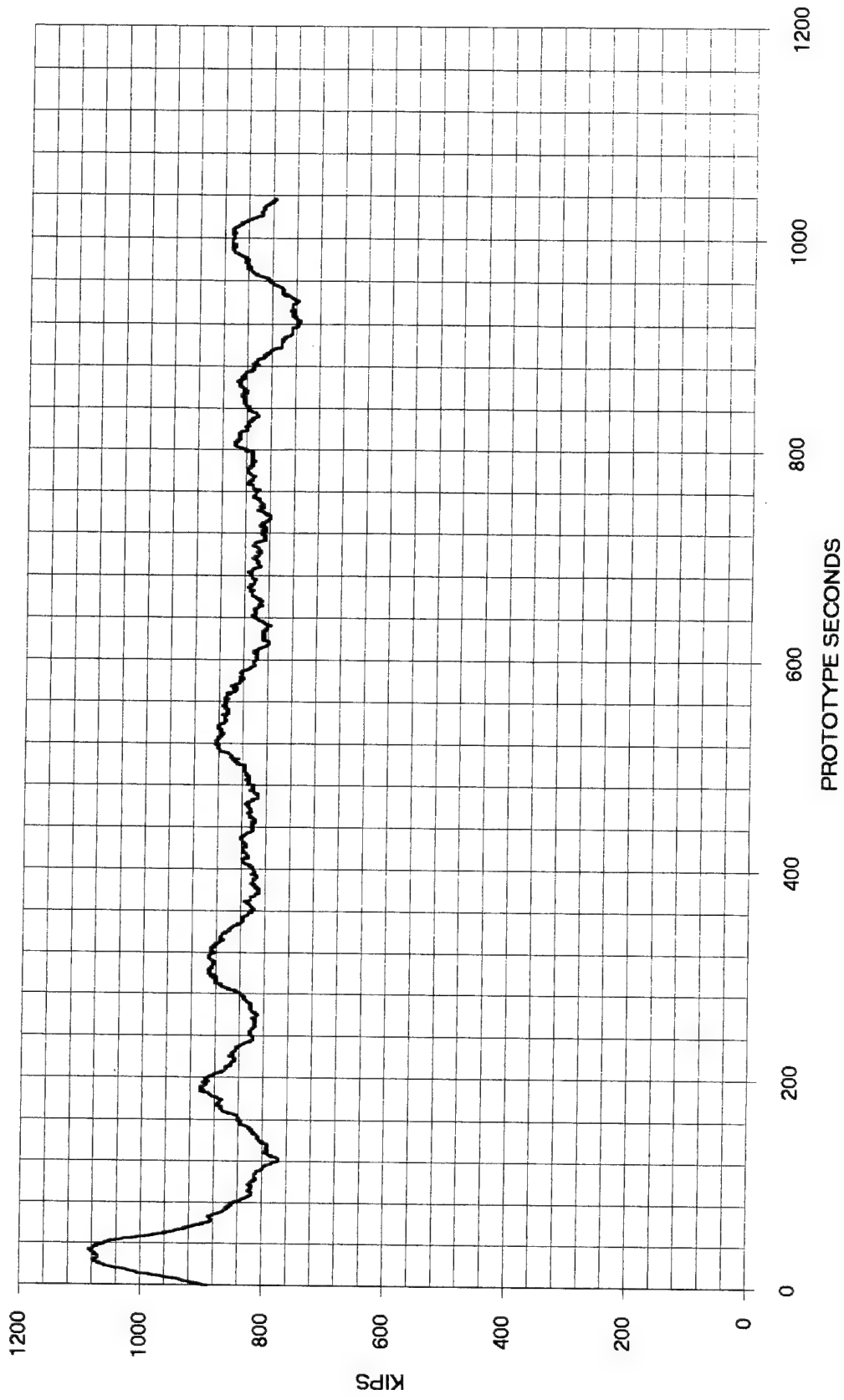
A571 - ML-1 TOWING



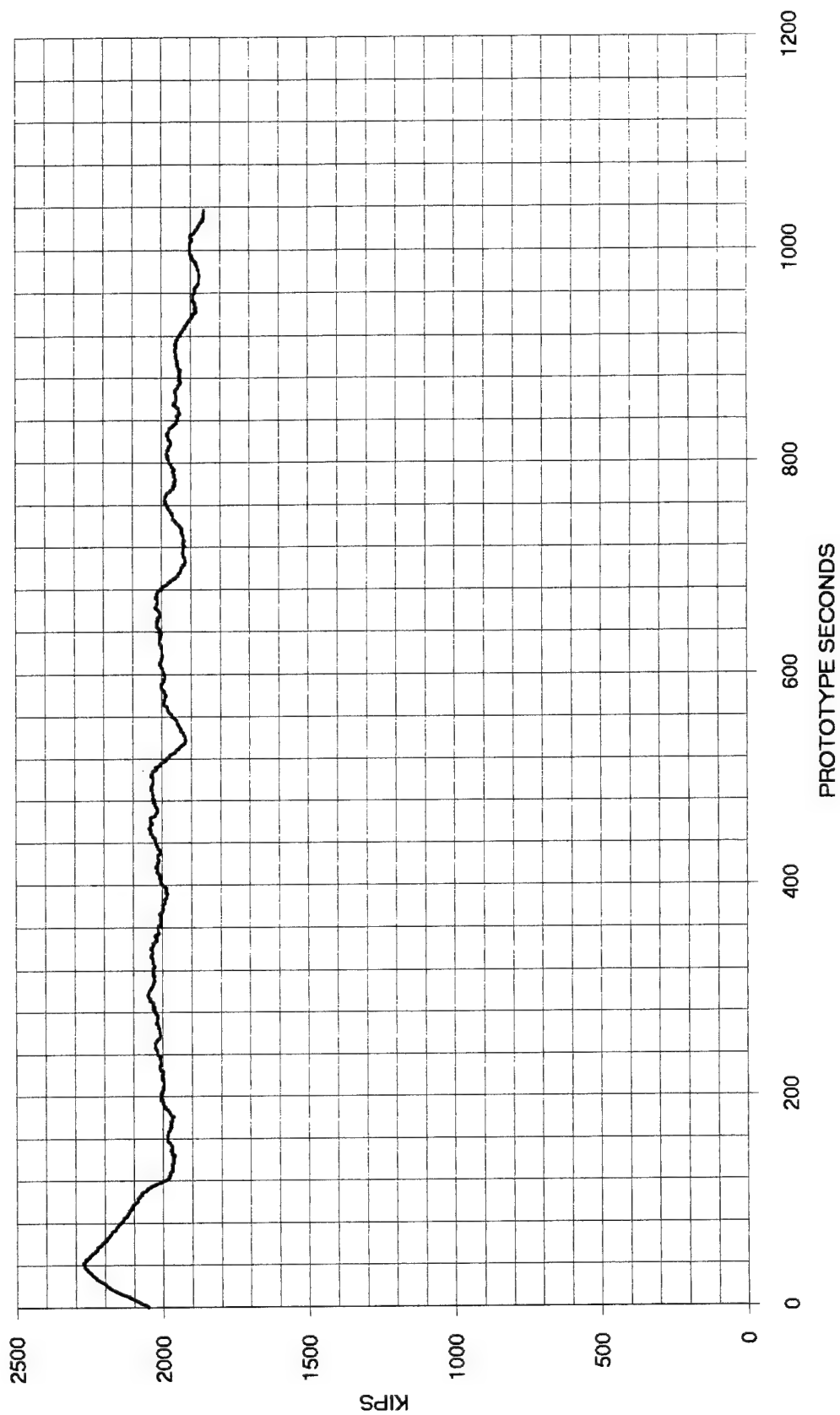
A571 - ML-2 TOWING



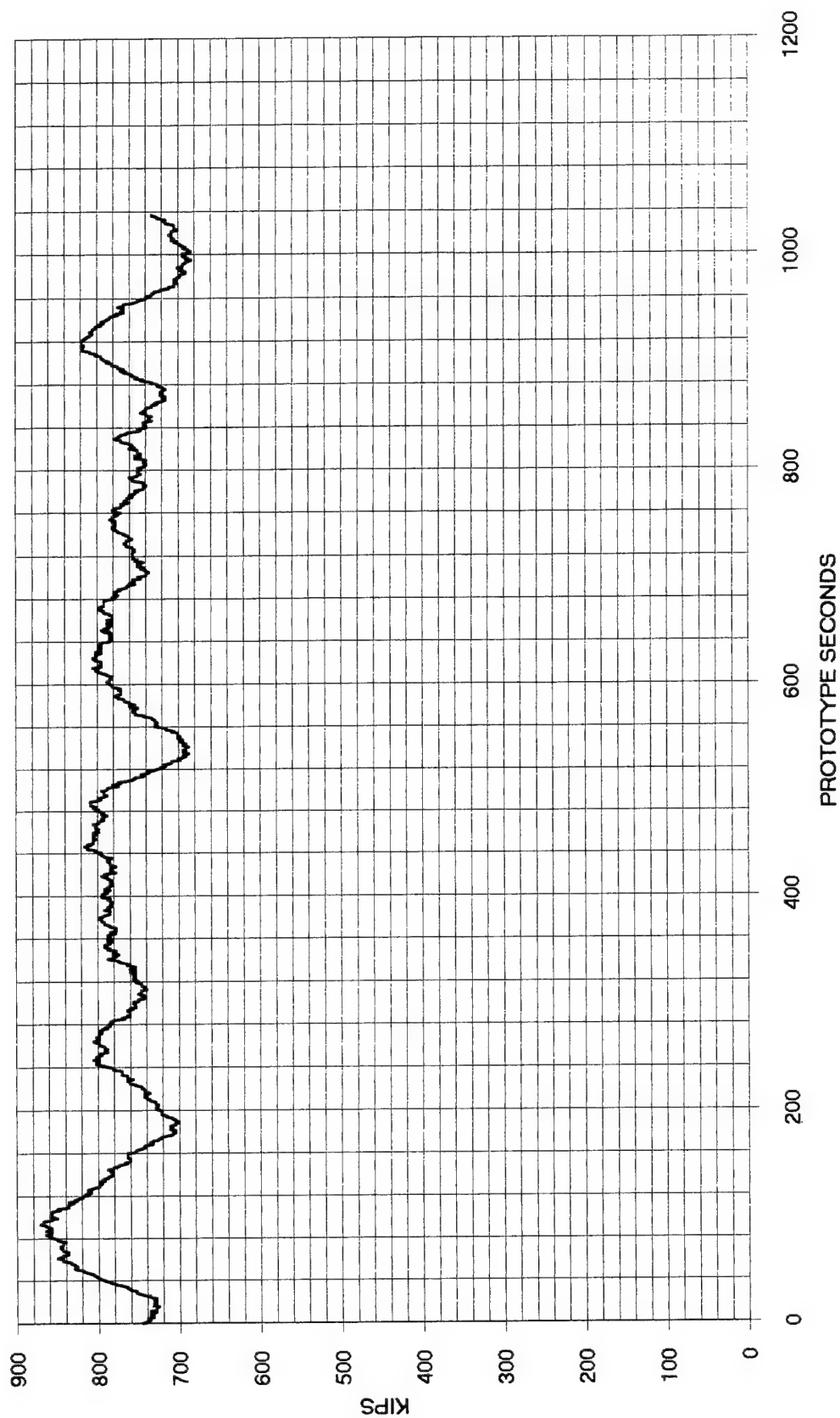
A571 - ML-3 TOWING



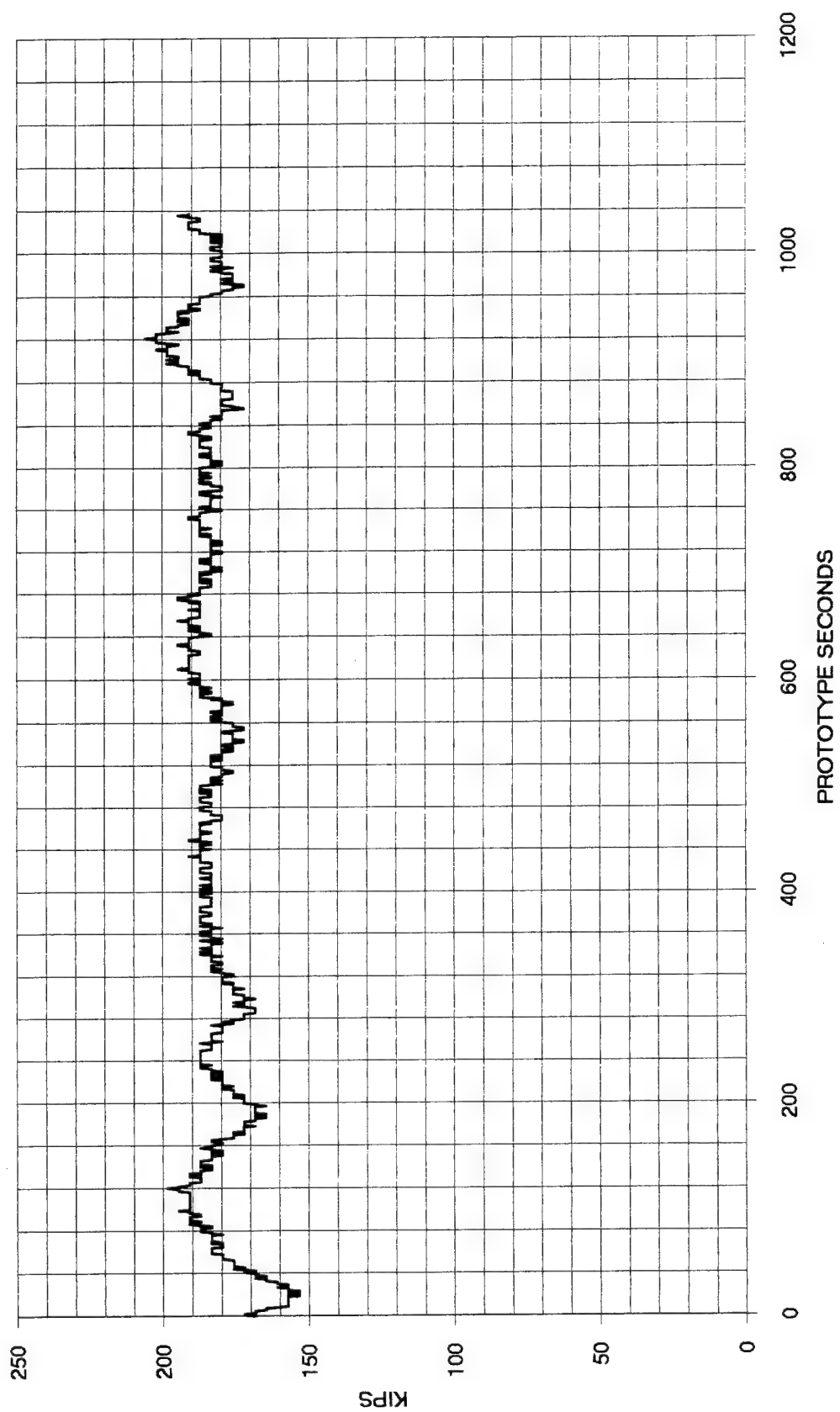
A571 - ML-4 TOWING



A571 - ML-5 TOWING



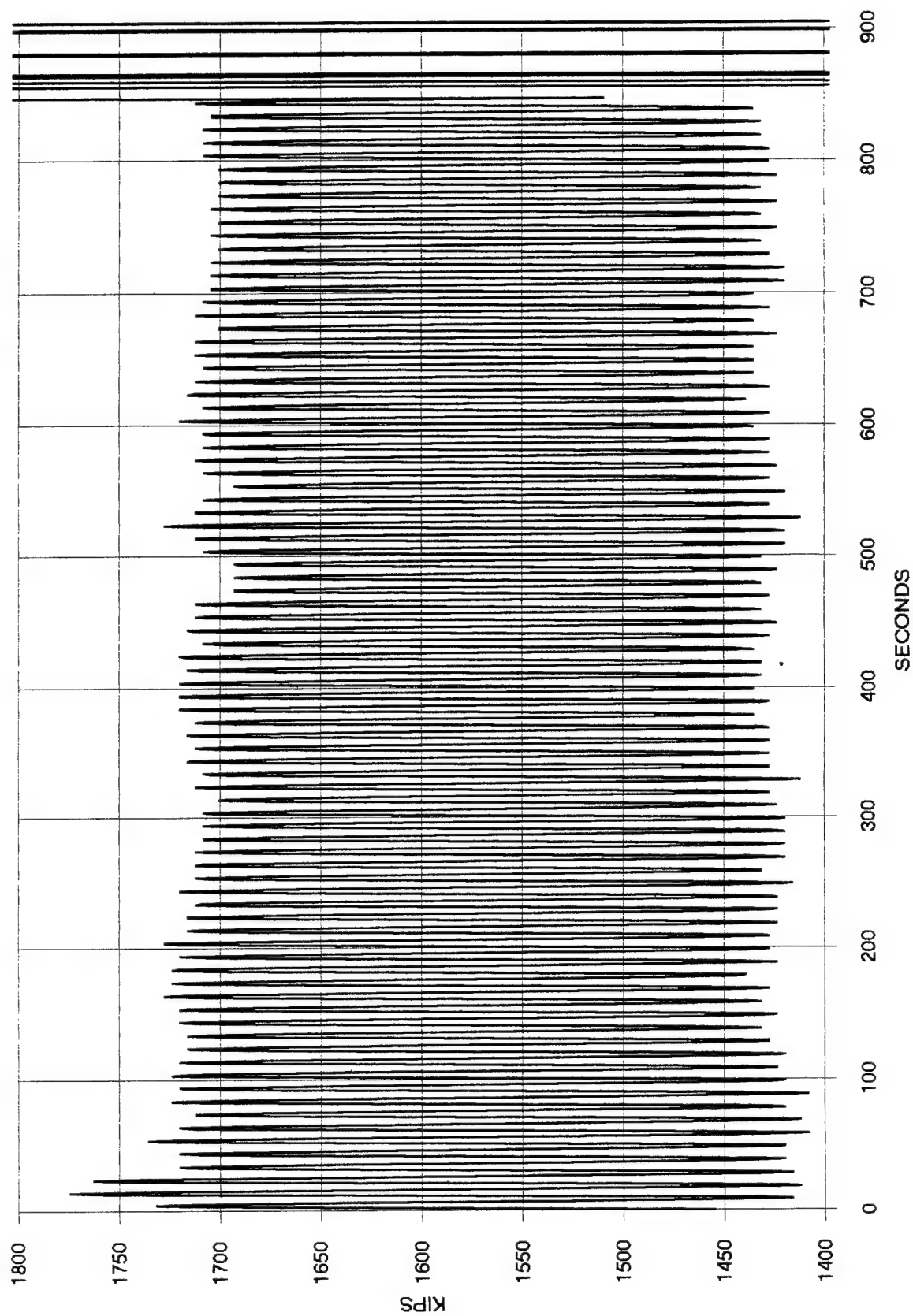
A571 - ML-6 TOWING



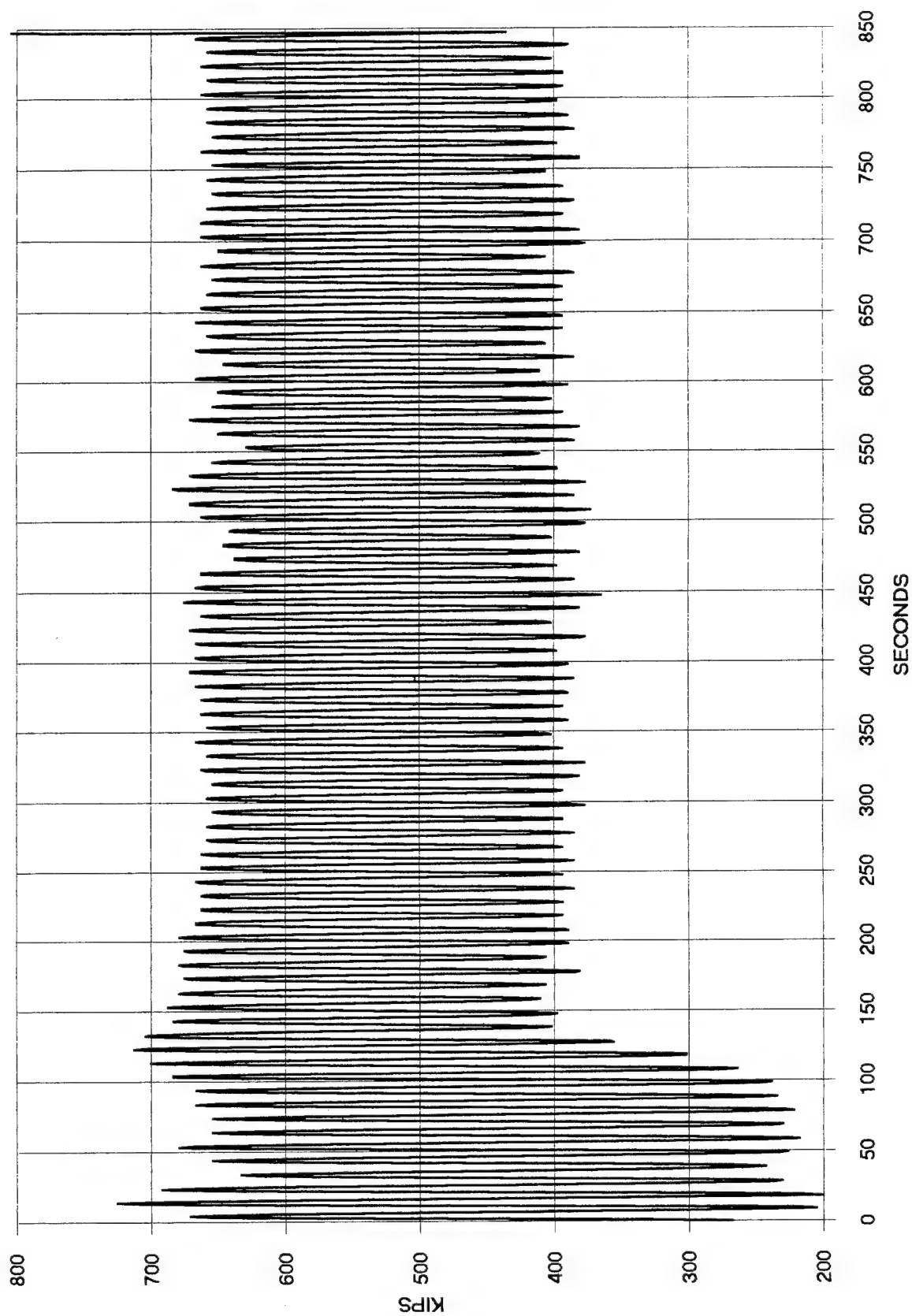
APPENDIX K

TIME HISTORY PLOTS FOR BUOY-ON-A-FIXED-BAR TESTS

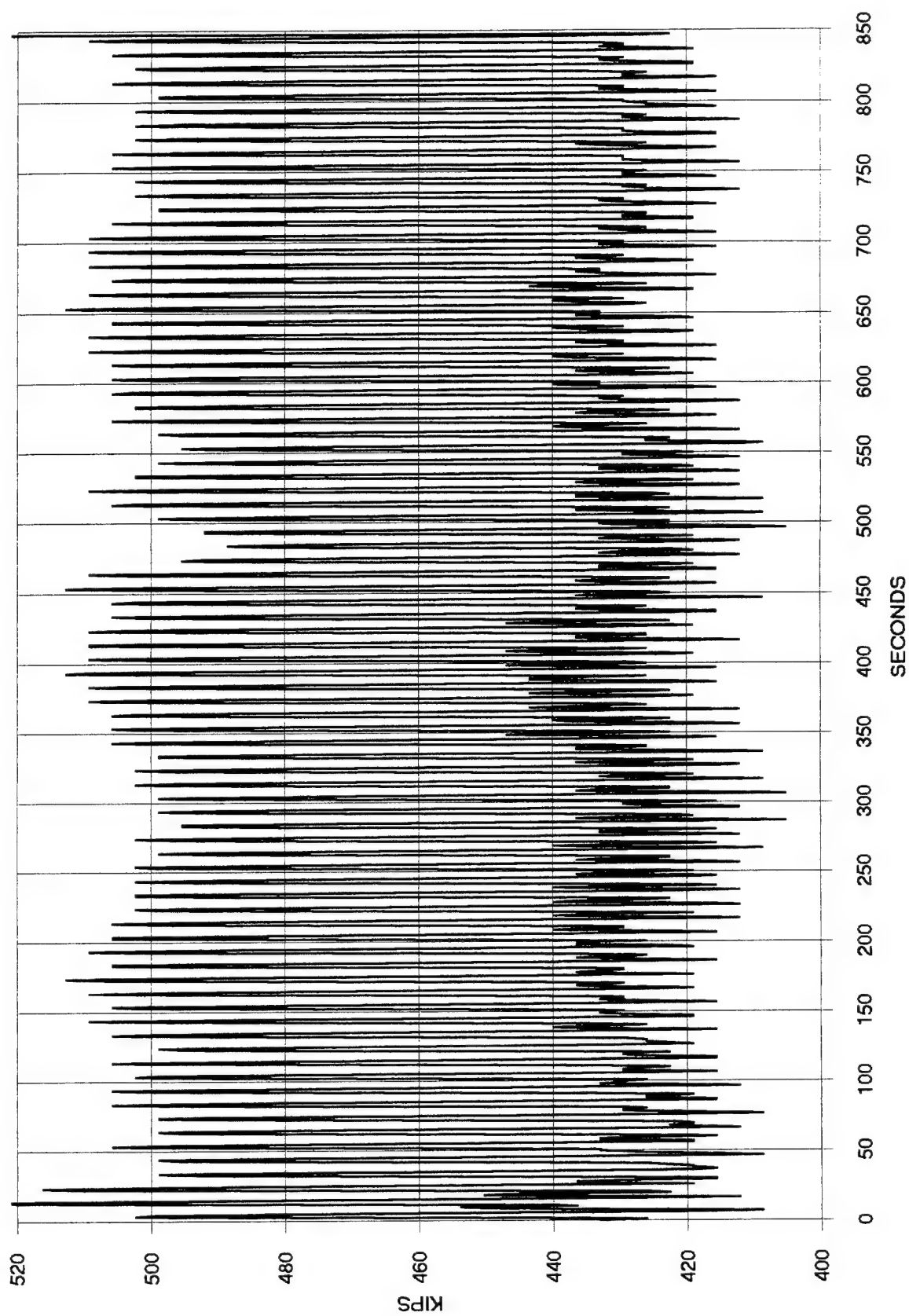
A531 - BT-1 THP (DRY)



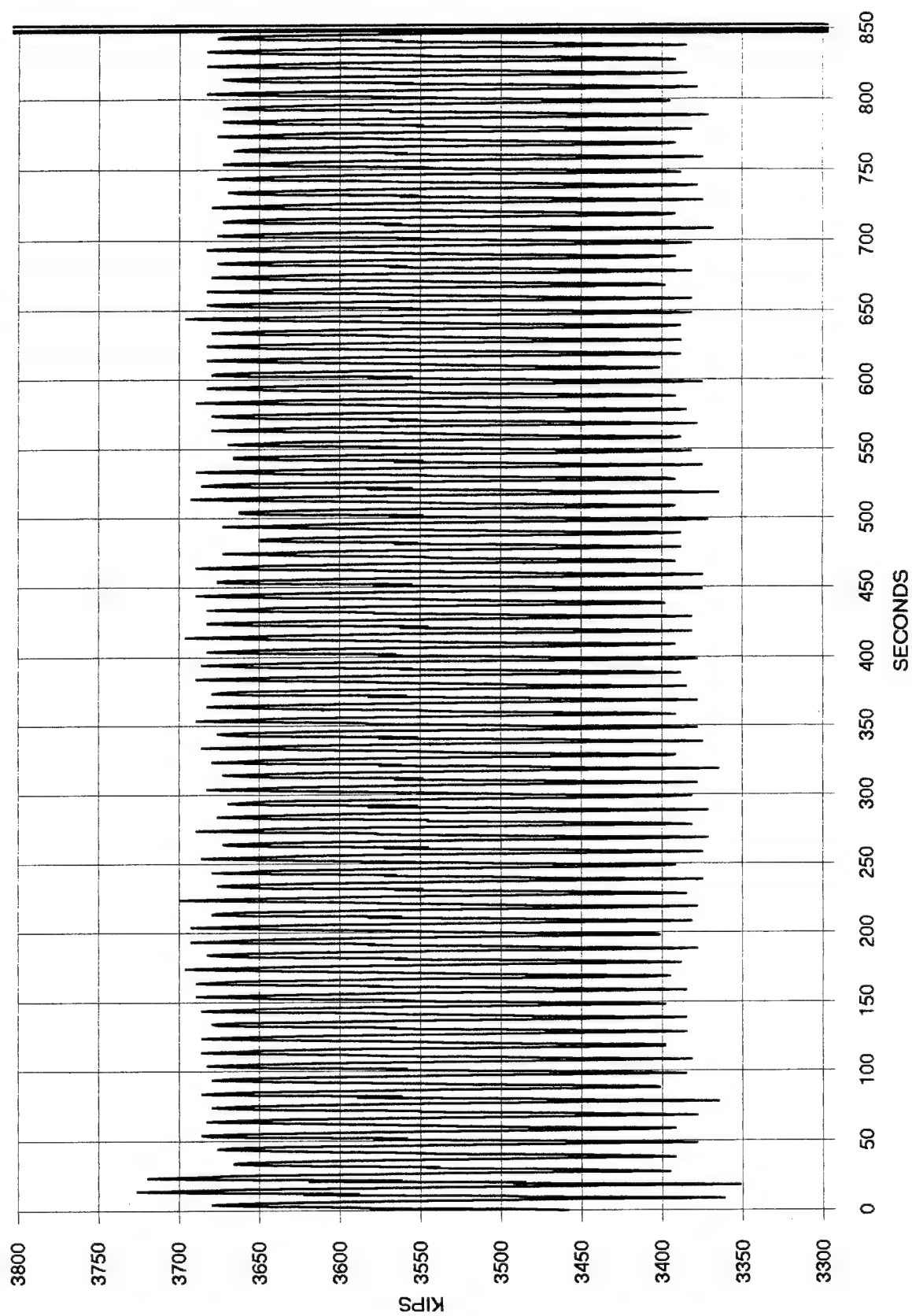
A531 - BT-2 THP (INV. CONE)



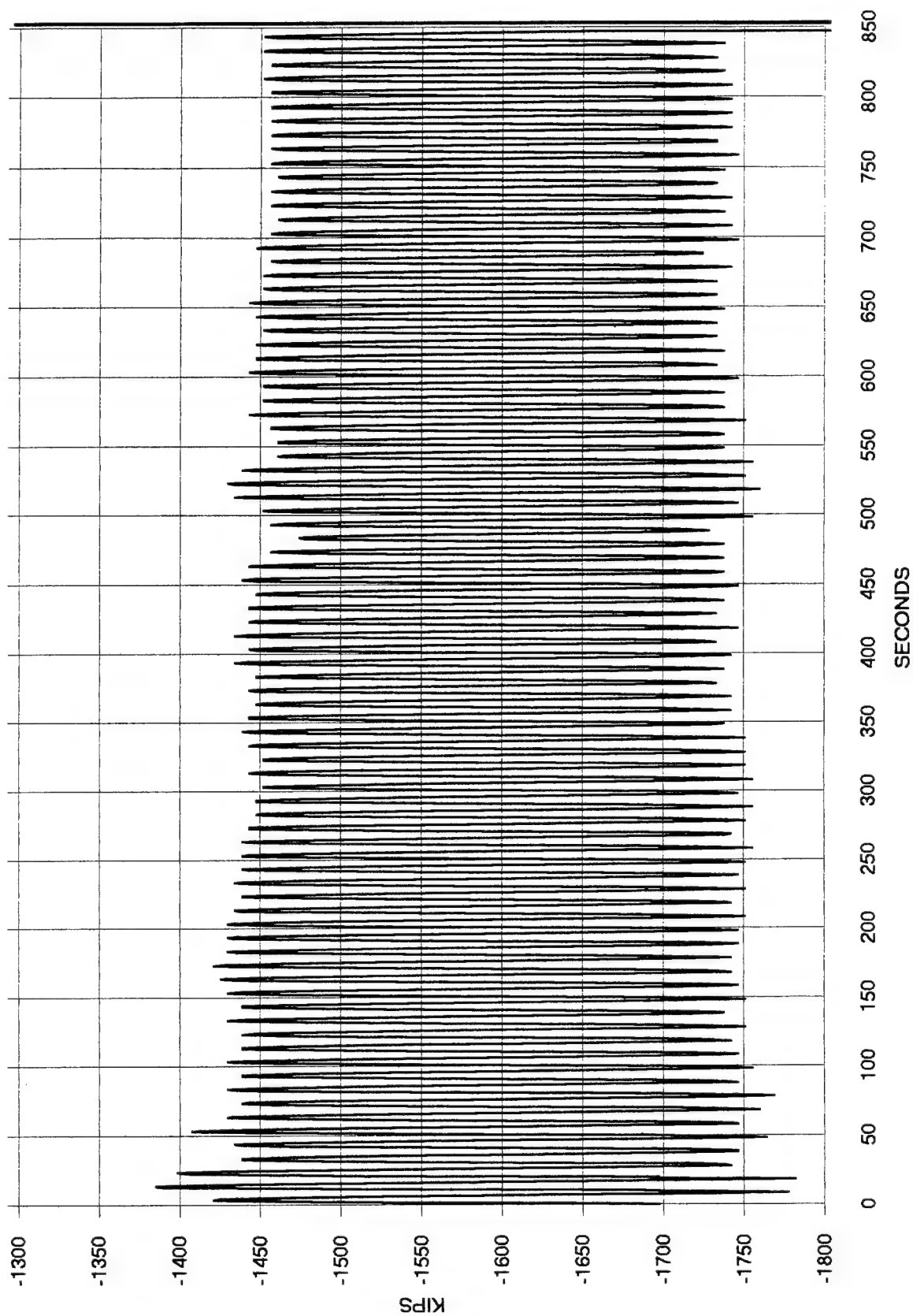
A531 - BT-3 THP (HOUR GLASS)



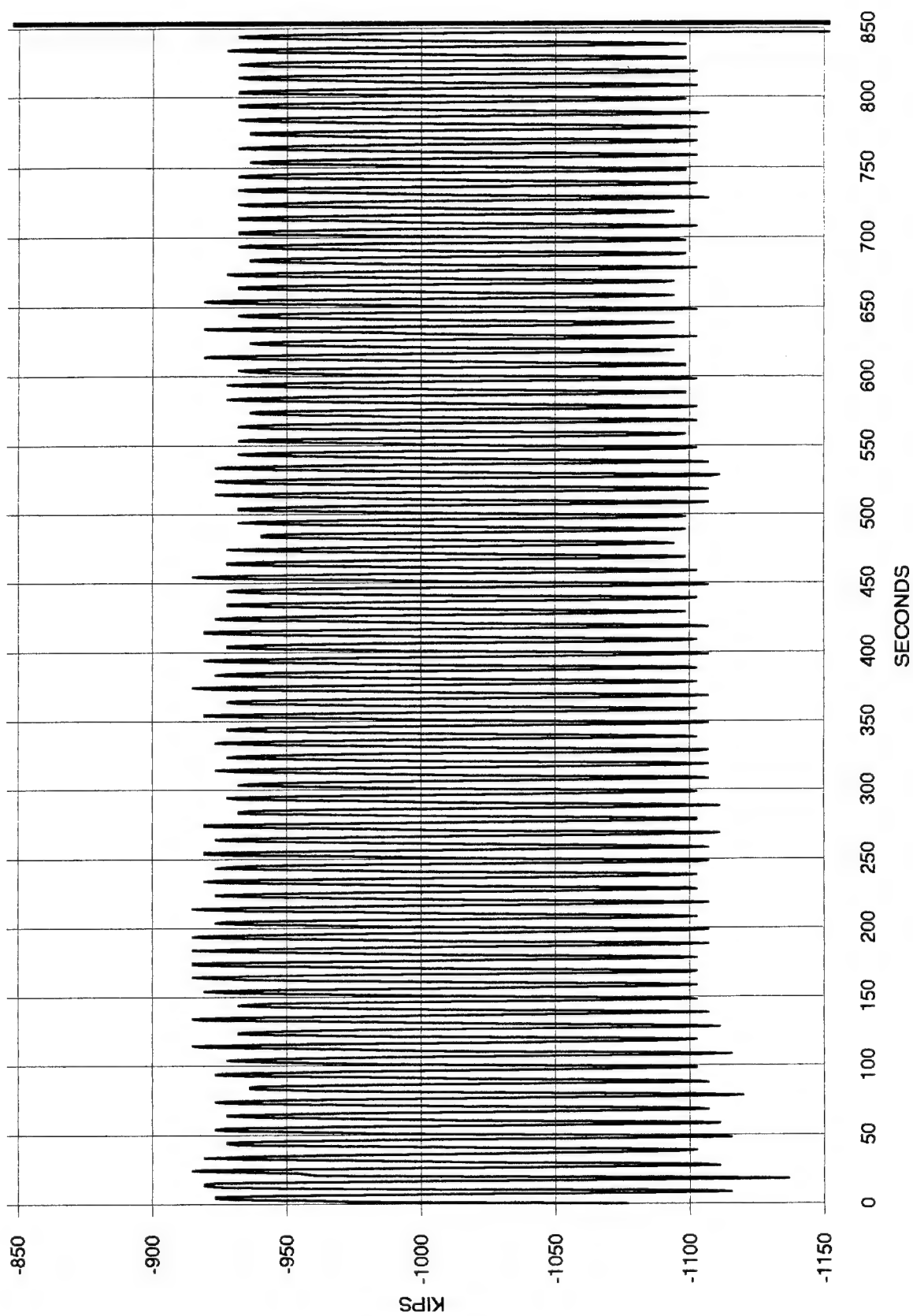
A531 - BT-4 THP (SEGMENTED)



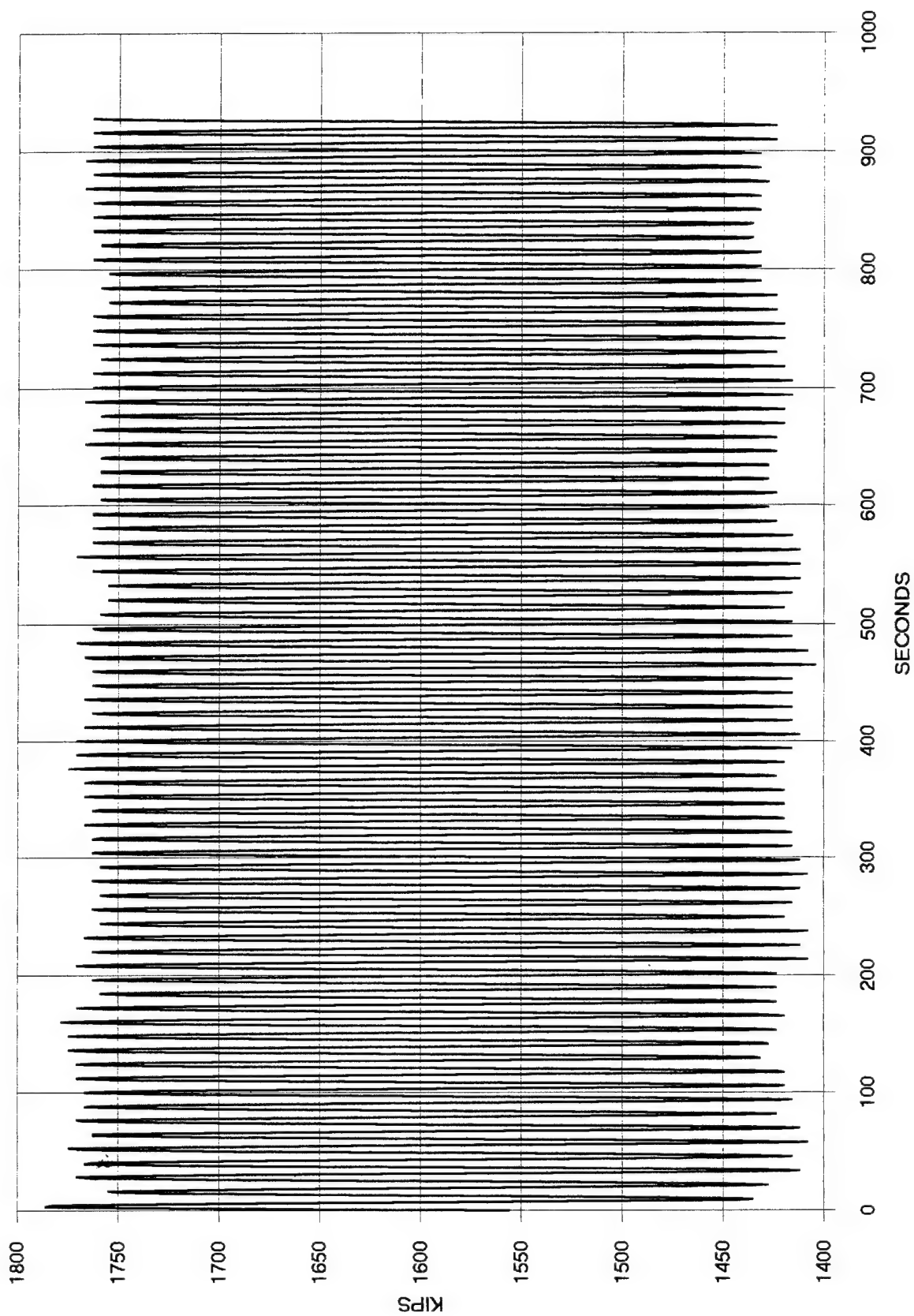
A531 - BT-5 THP (LINK BUOY)



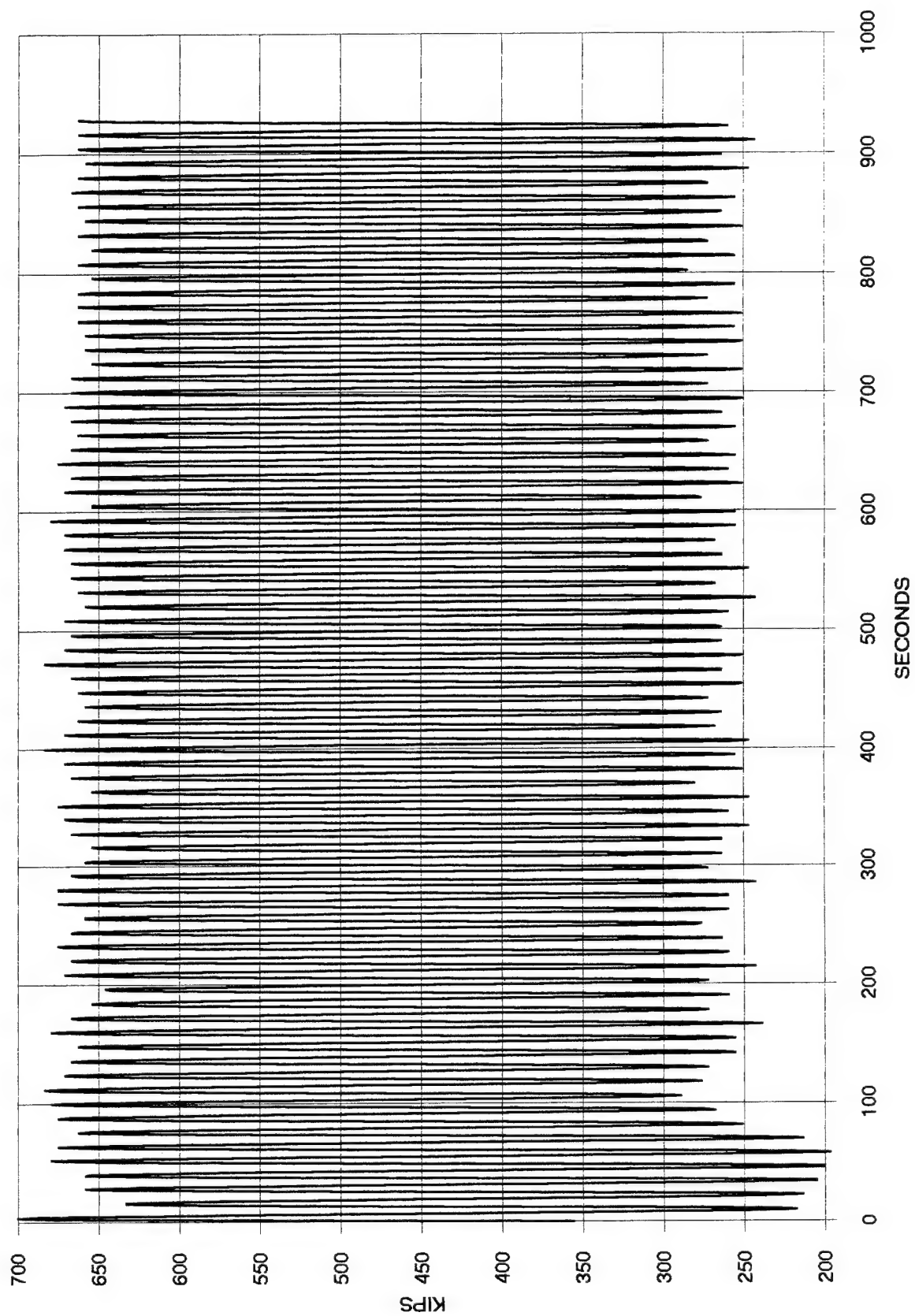
A531 - BT-6 THP (CONST. TENSION)



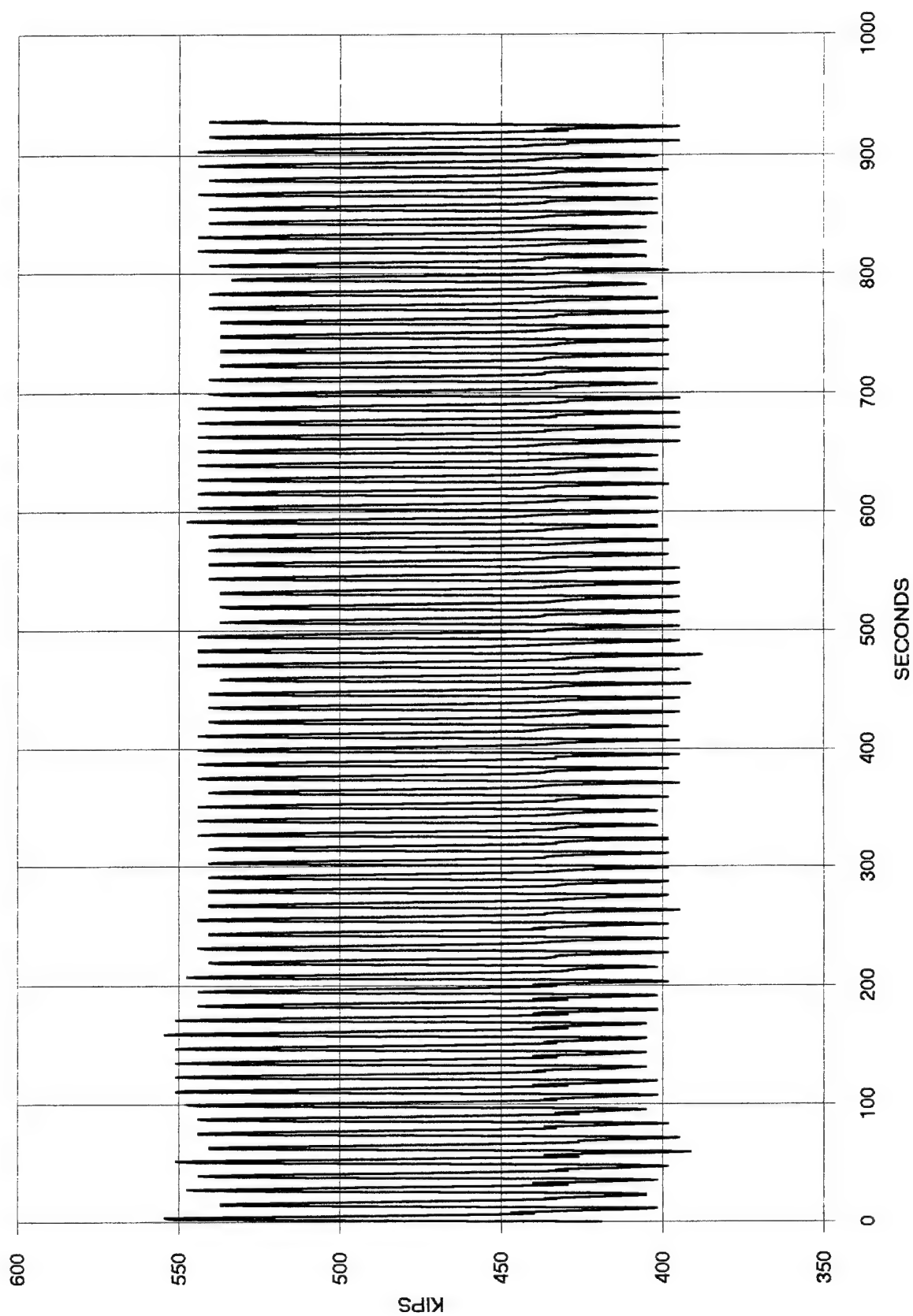
A532 - BT-1 THP (DRY)



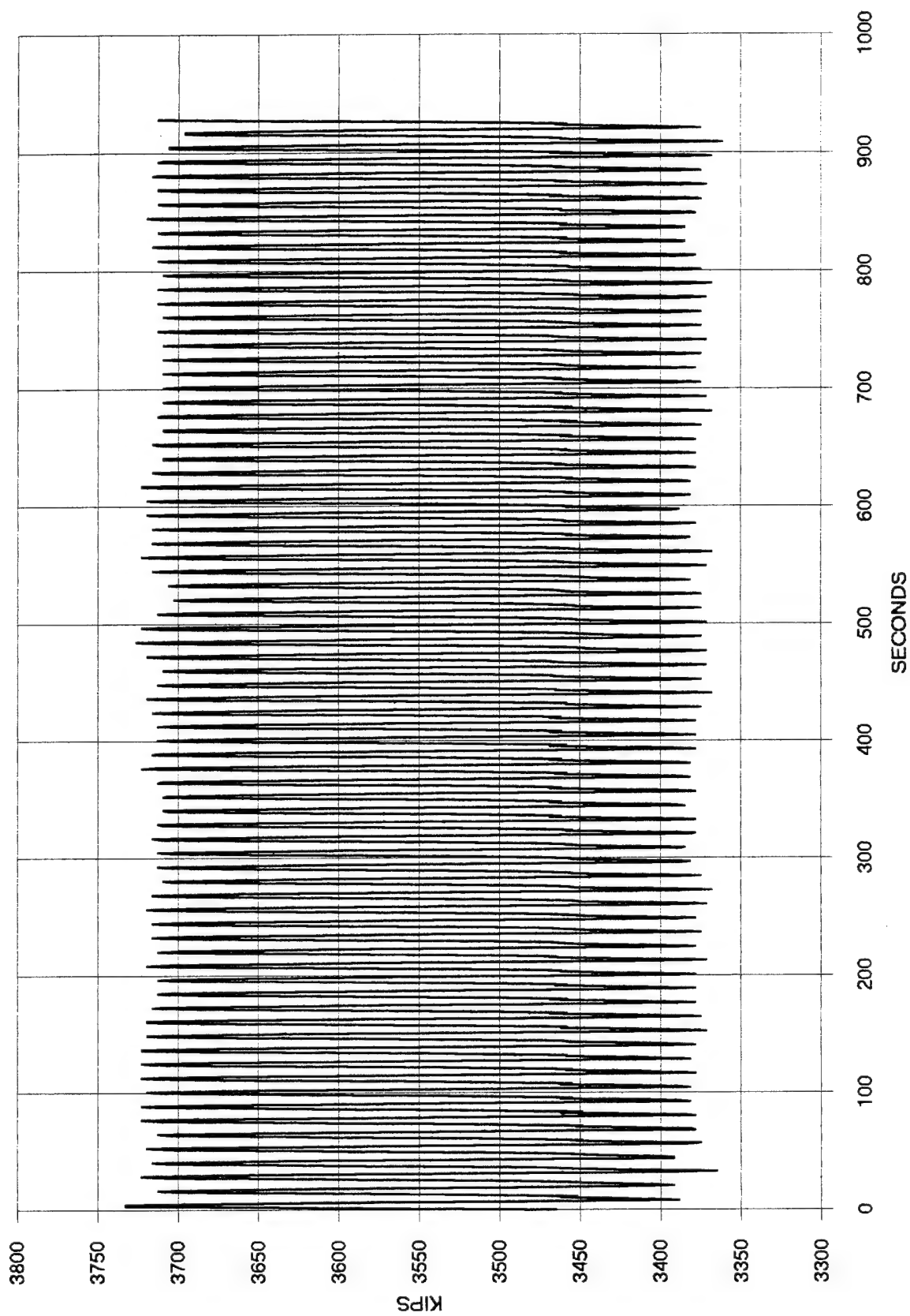
A532 - BT-2 THP (INV. CONE)



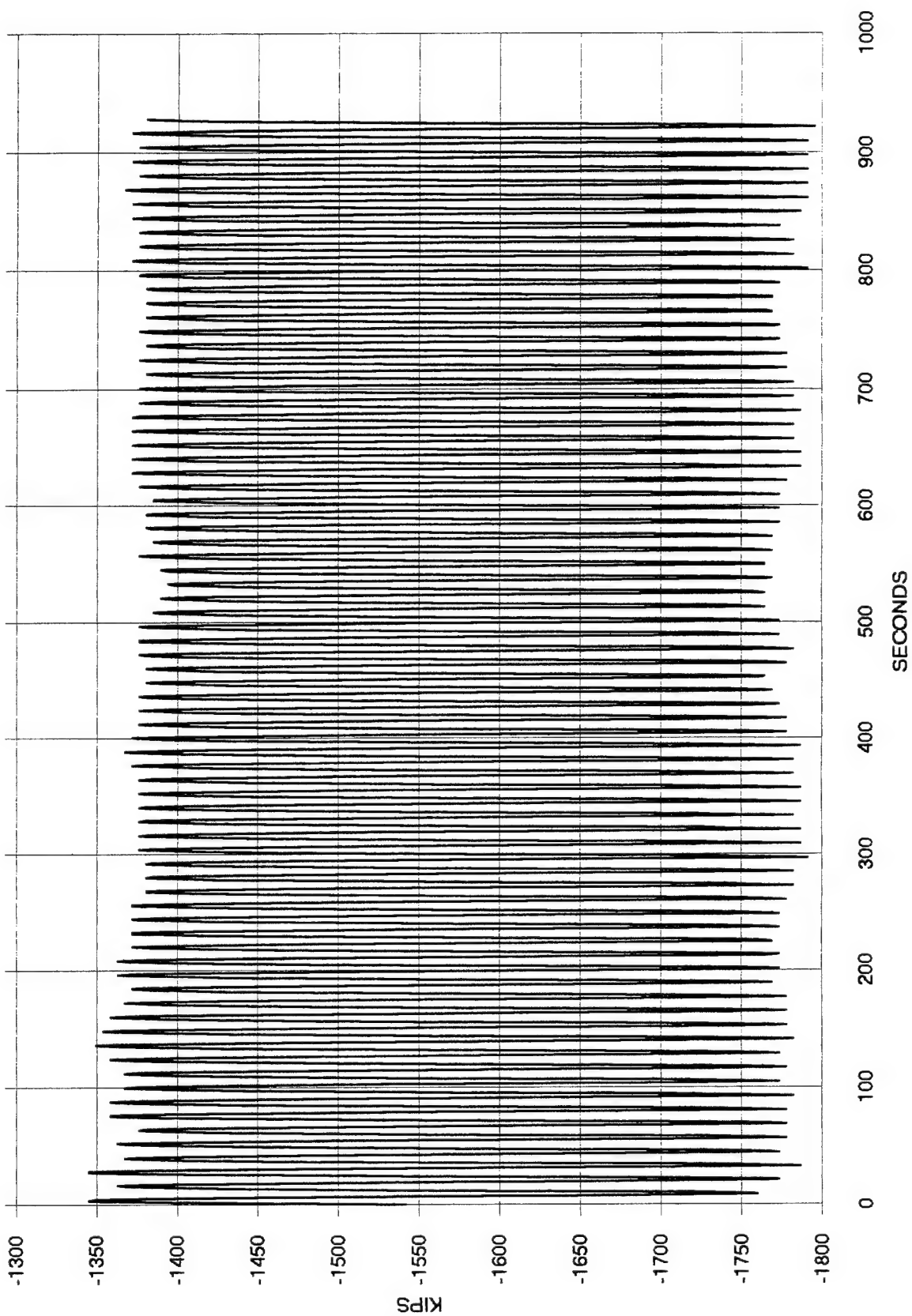
A532 - BT-3 THP (HOUR GLASS)



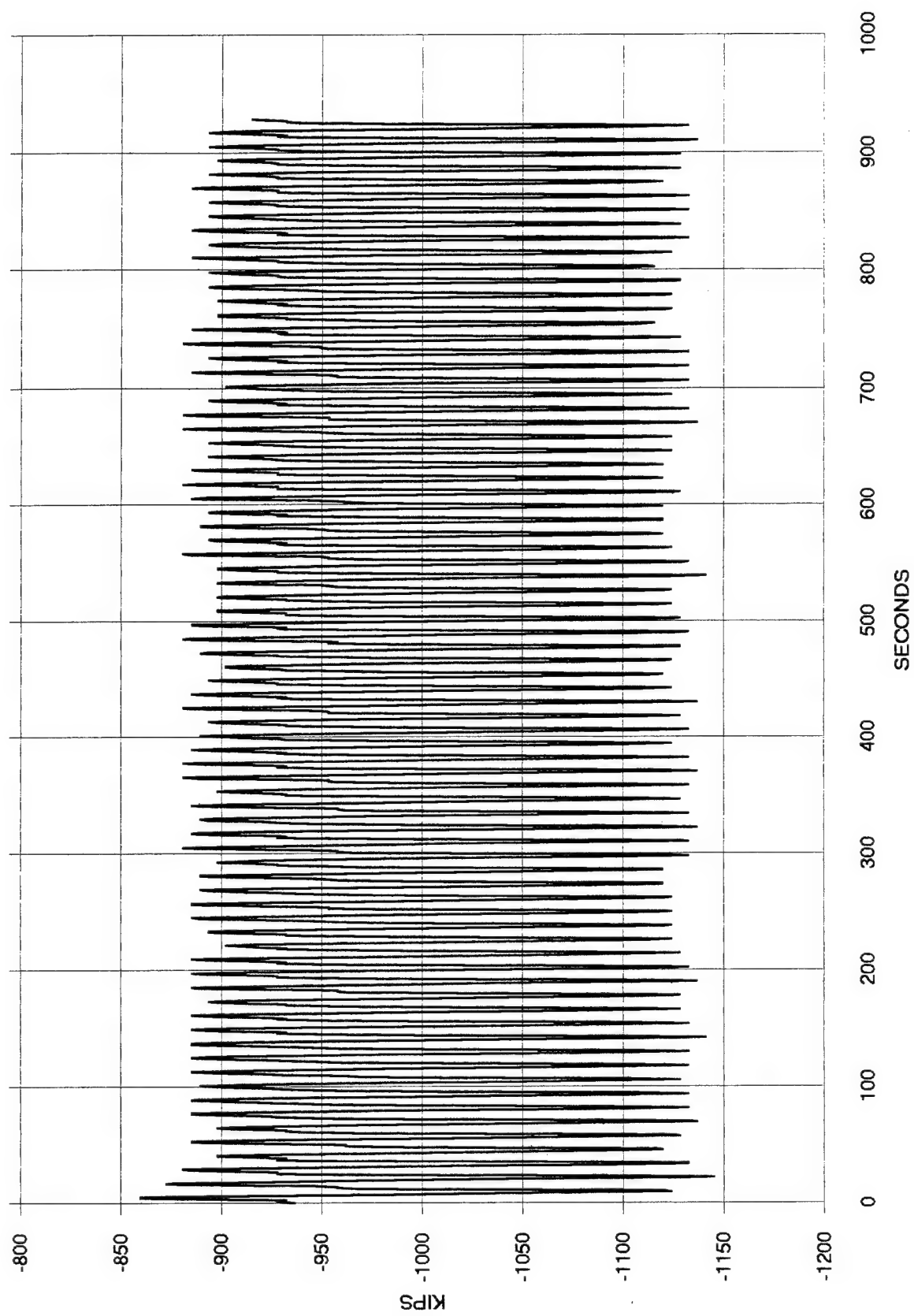
A532 - BT-4 THP (SEGMENTED)



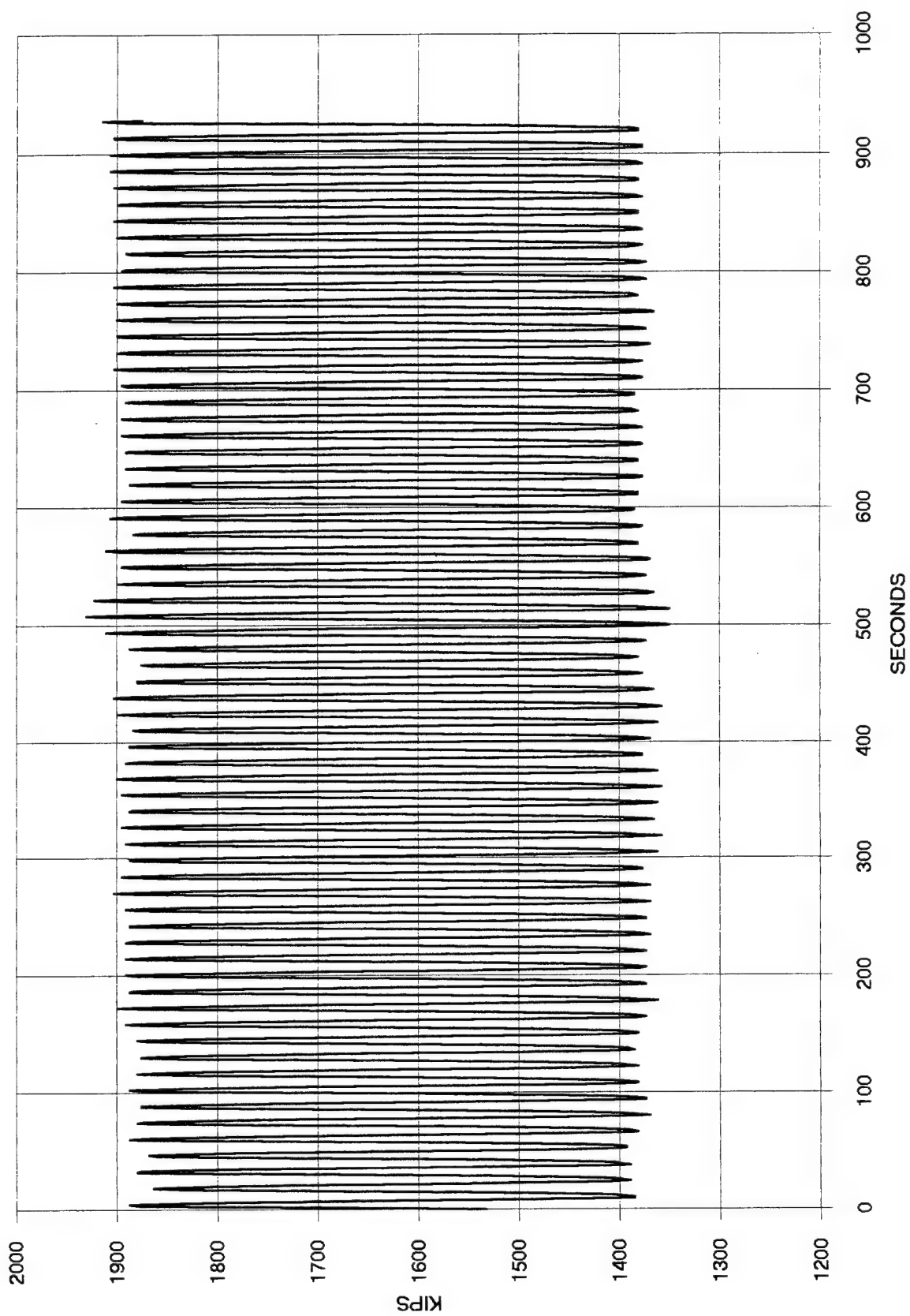
A532 - BT-5 THP (LINK BUOY)



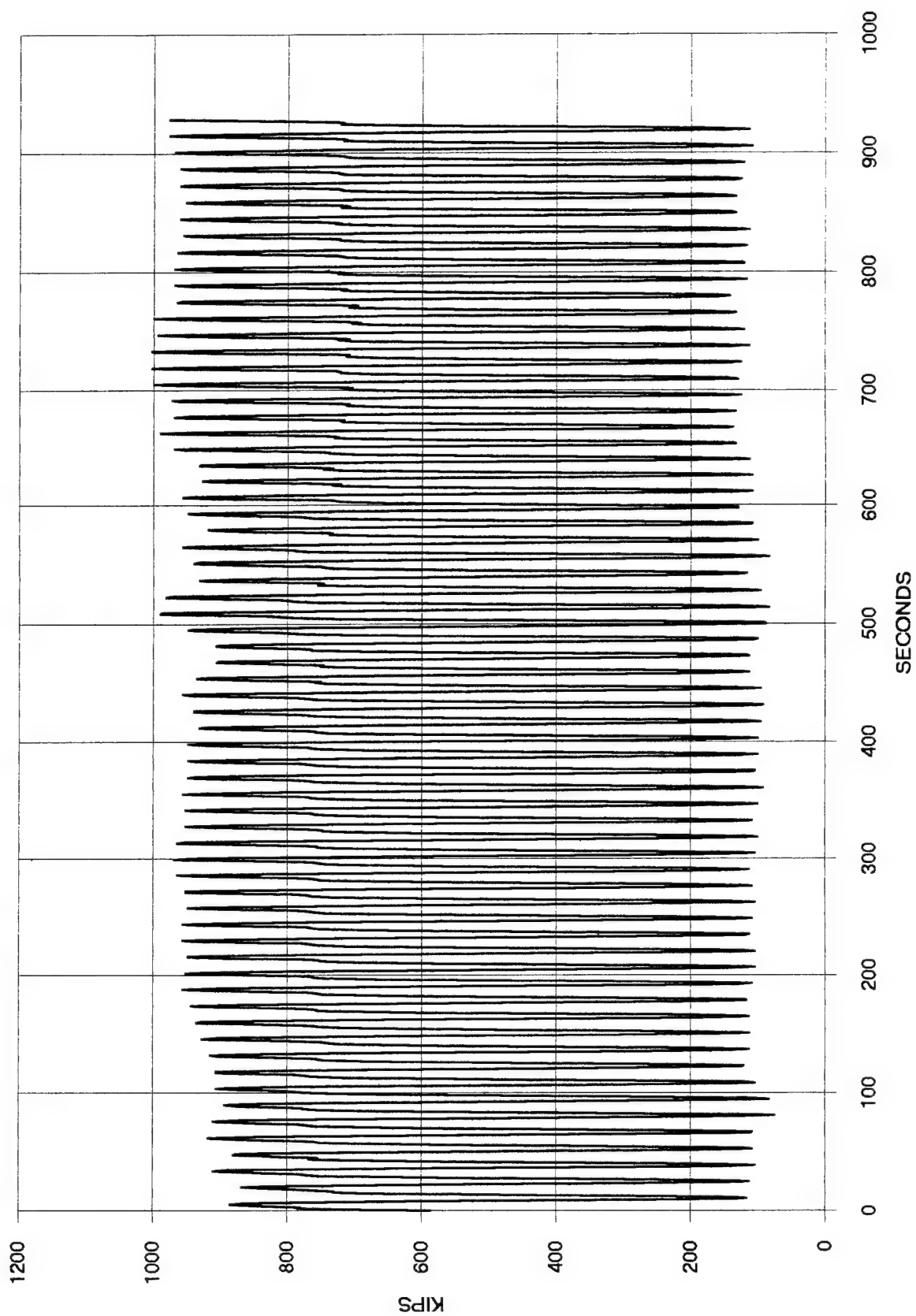
A532 - BT-6 THP (CONST. TENSION)



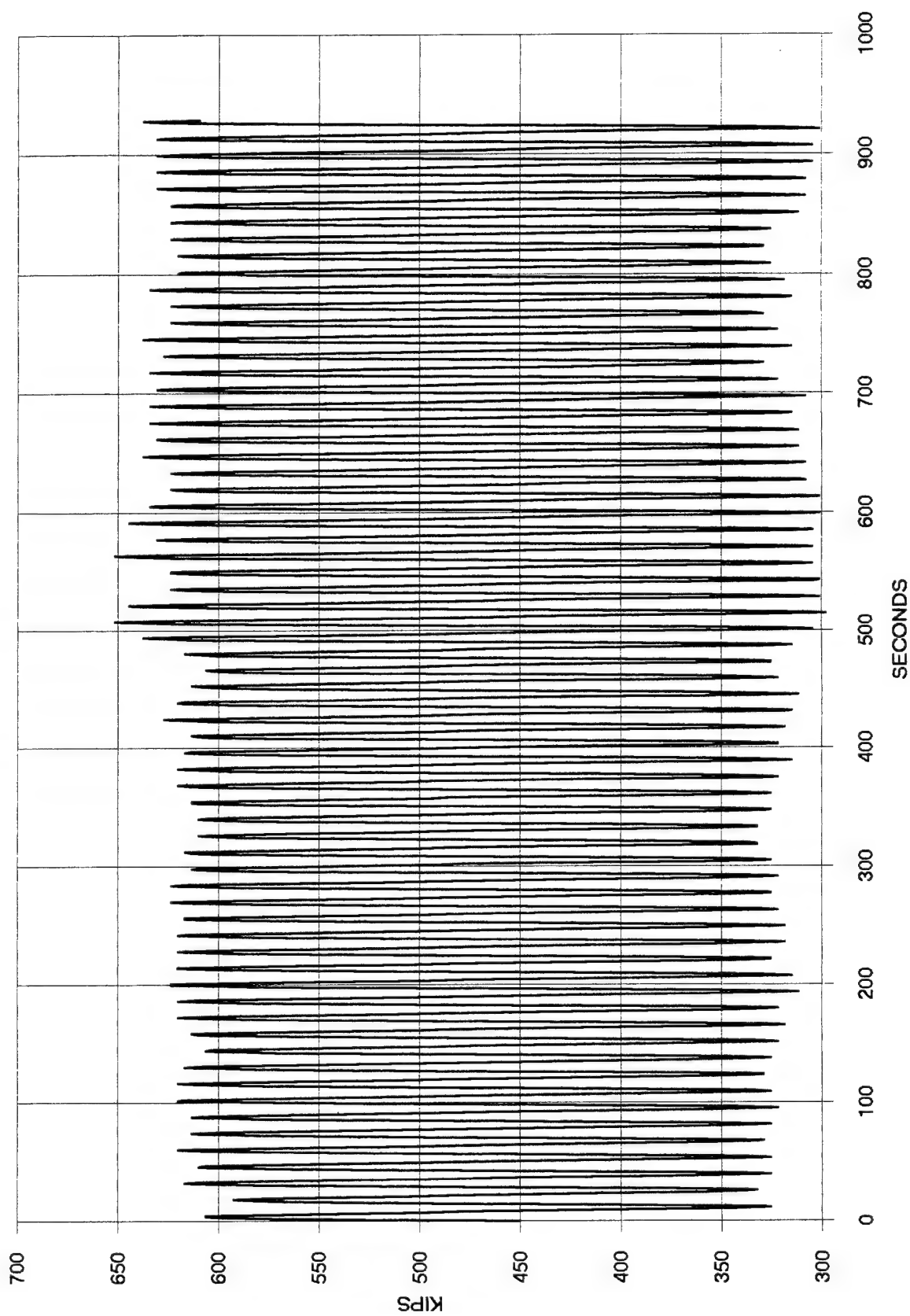
A533 - BT-1 THP (DRY)



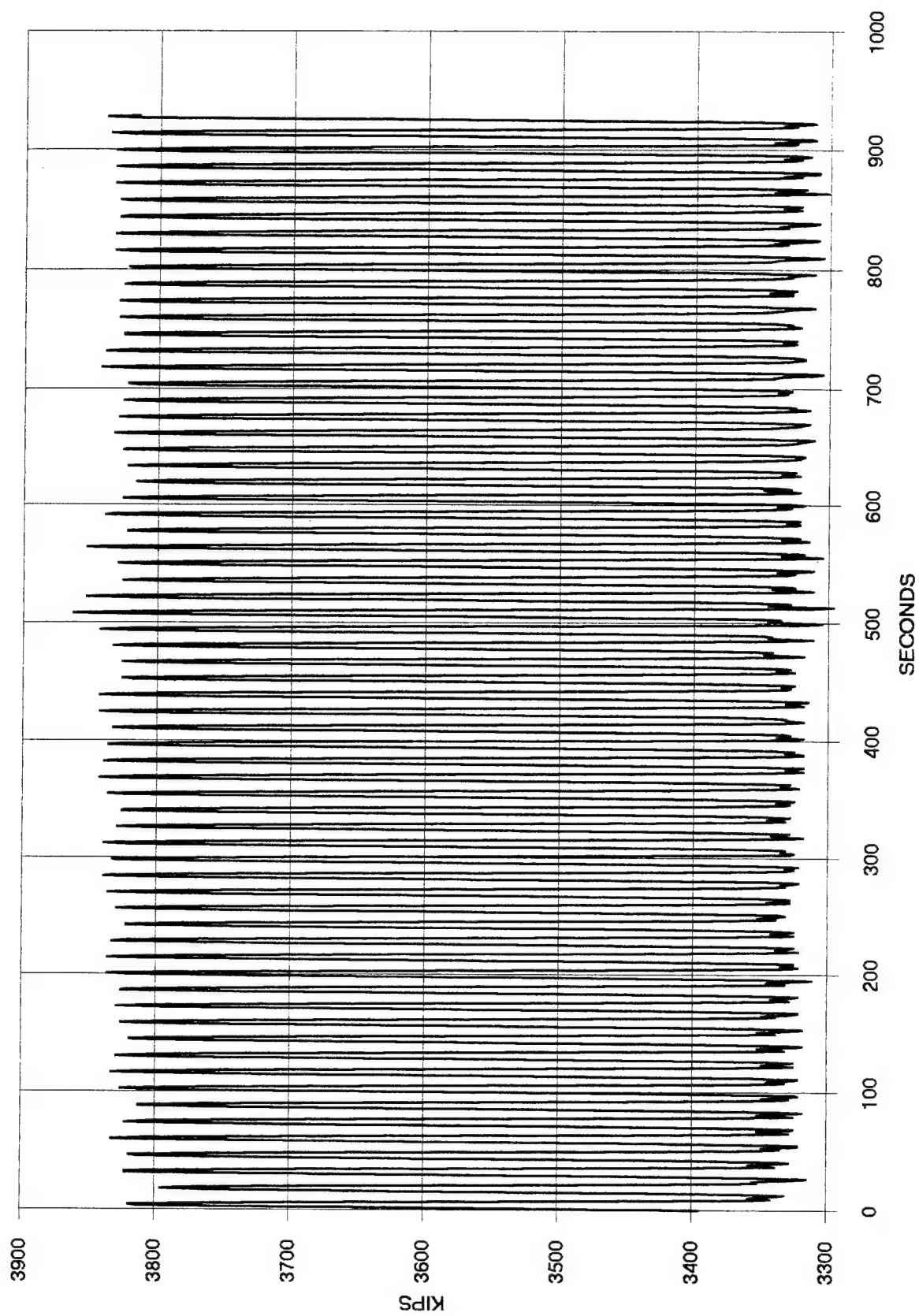
A533 - BT-2 THP (INV. CONE)



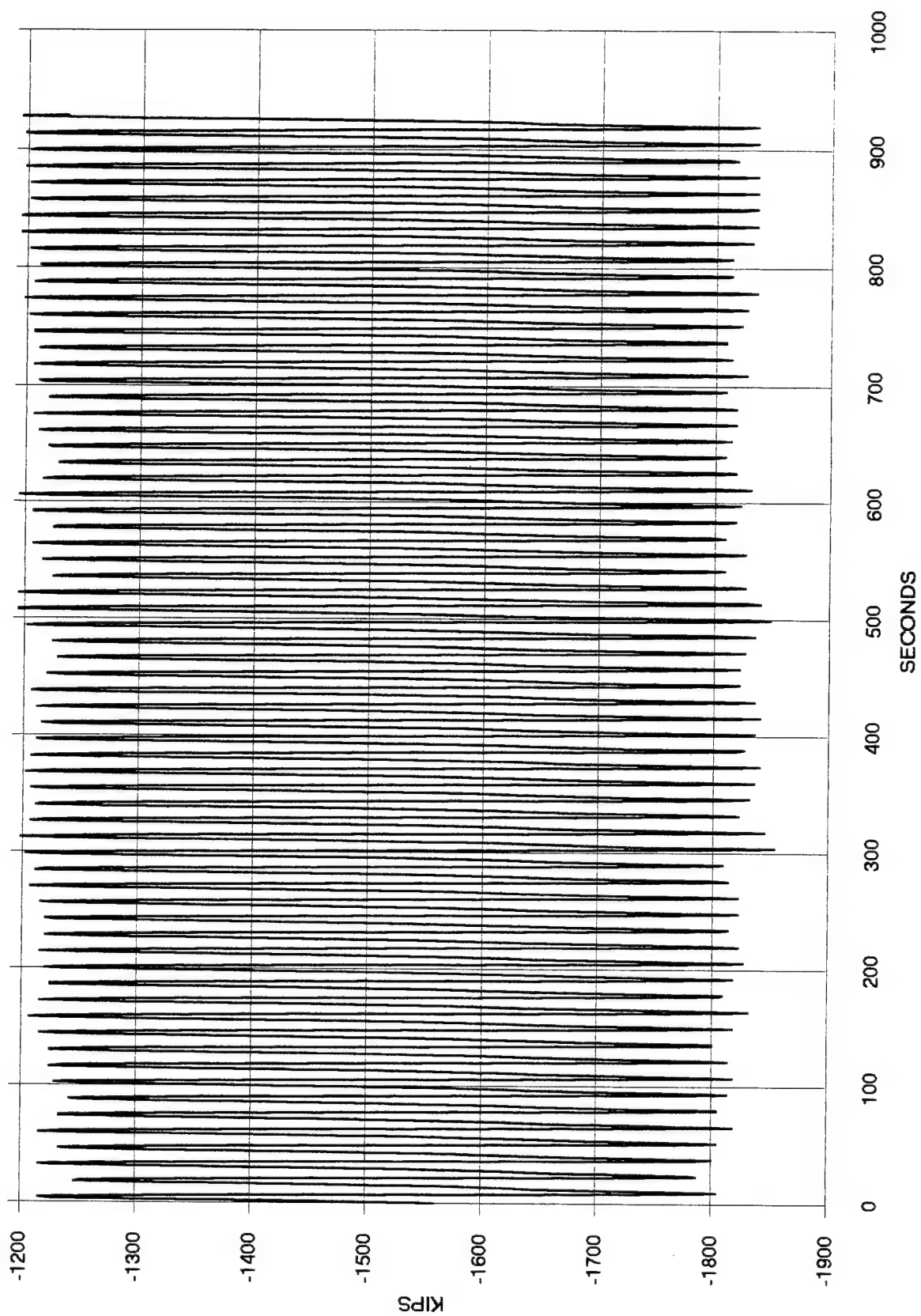
A533 - BT-3 THP (HOUR GLASS)



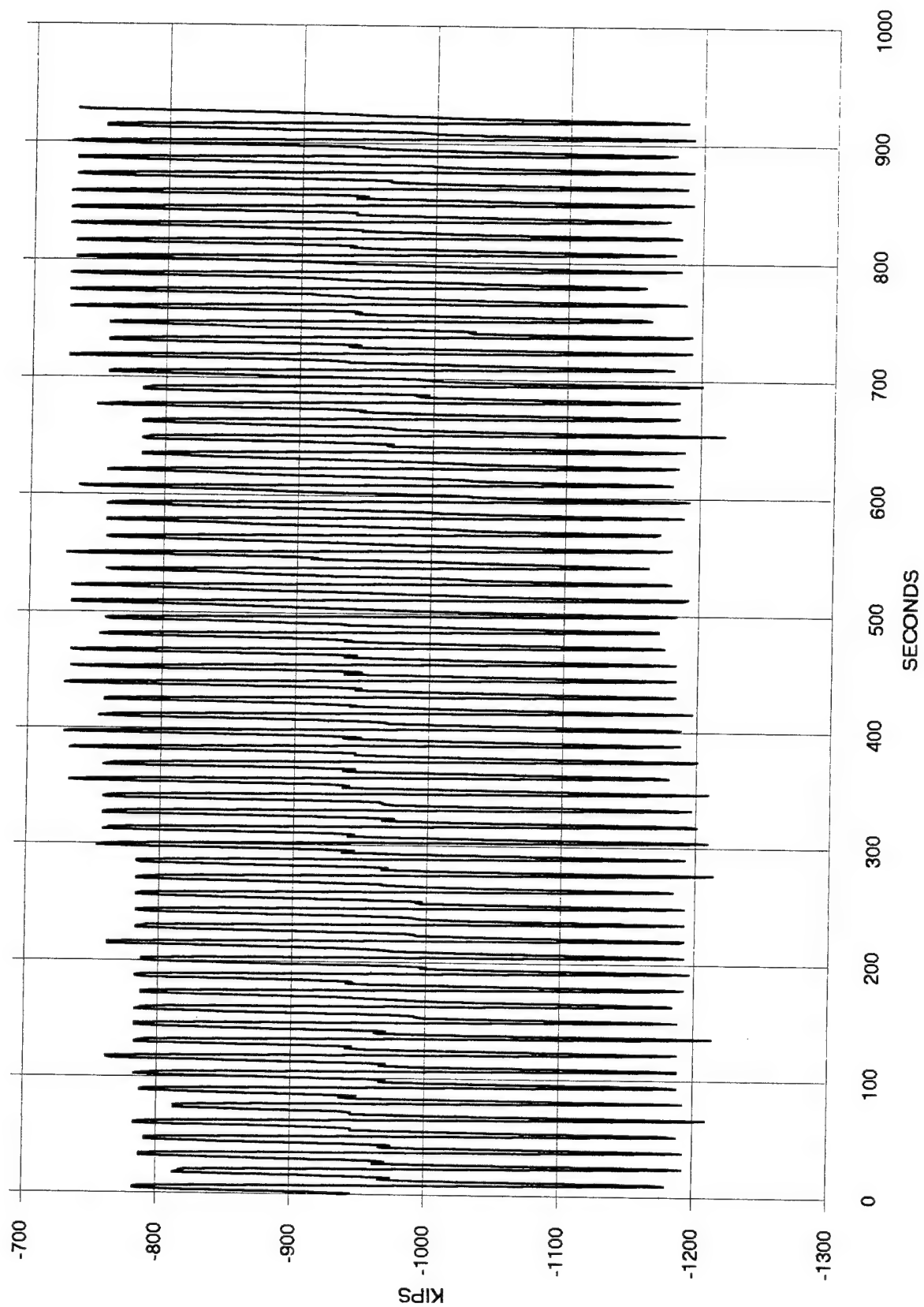
A533-BT-4 THP (SEGMENTED)



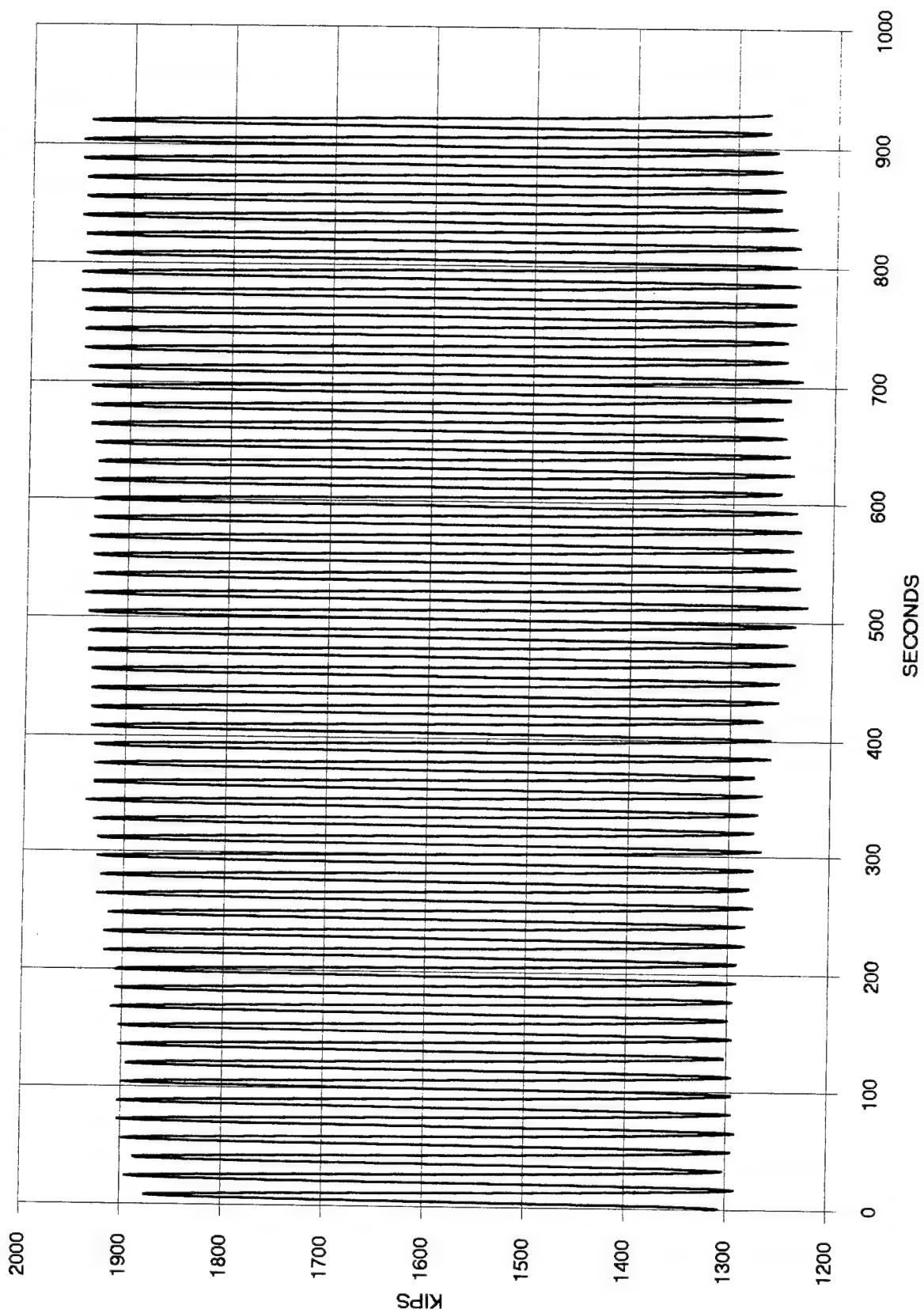
A533 - BT-5 THP (LINK BUOY)



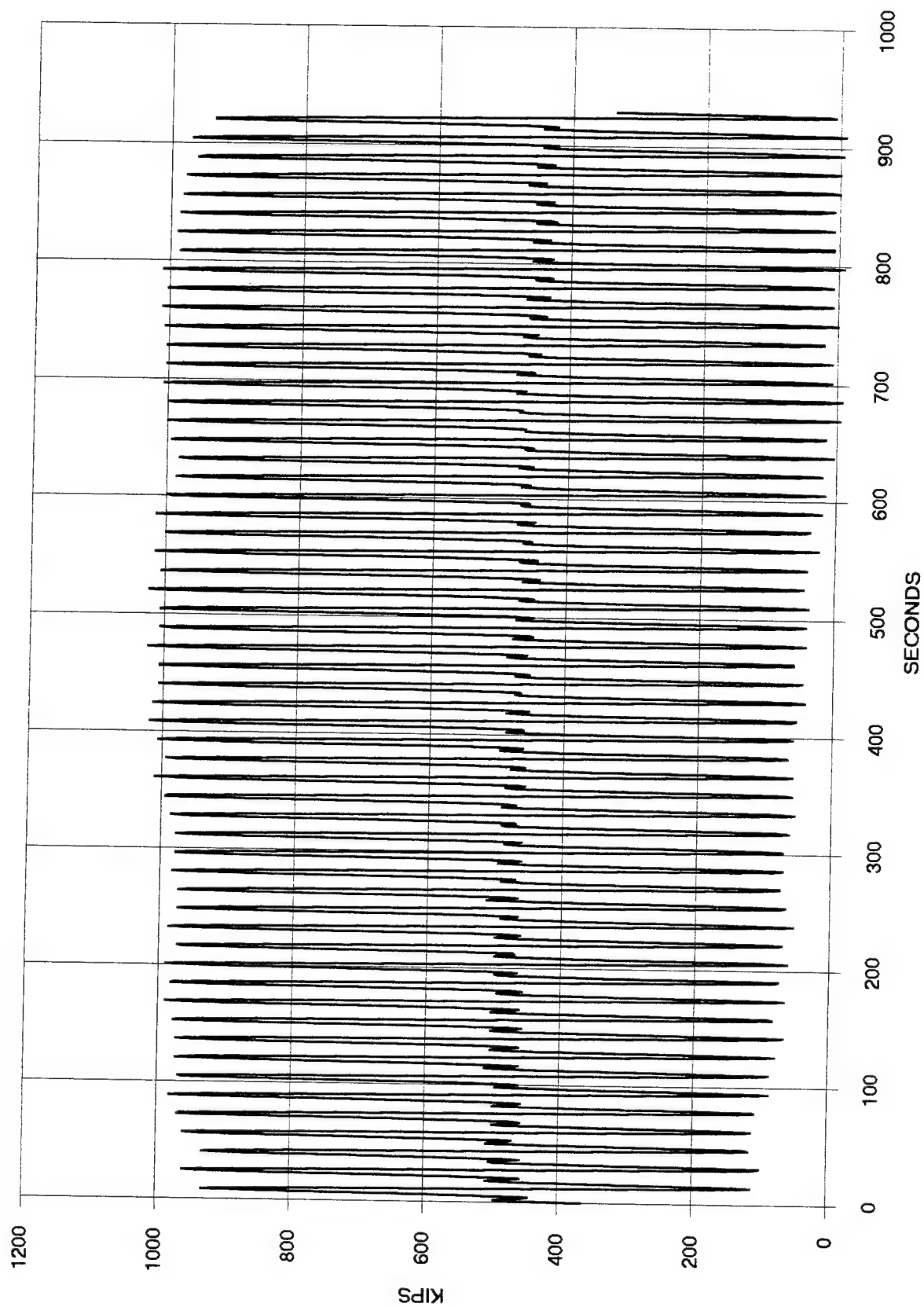
A533 - BT-6 THP (CONST. TENSION)



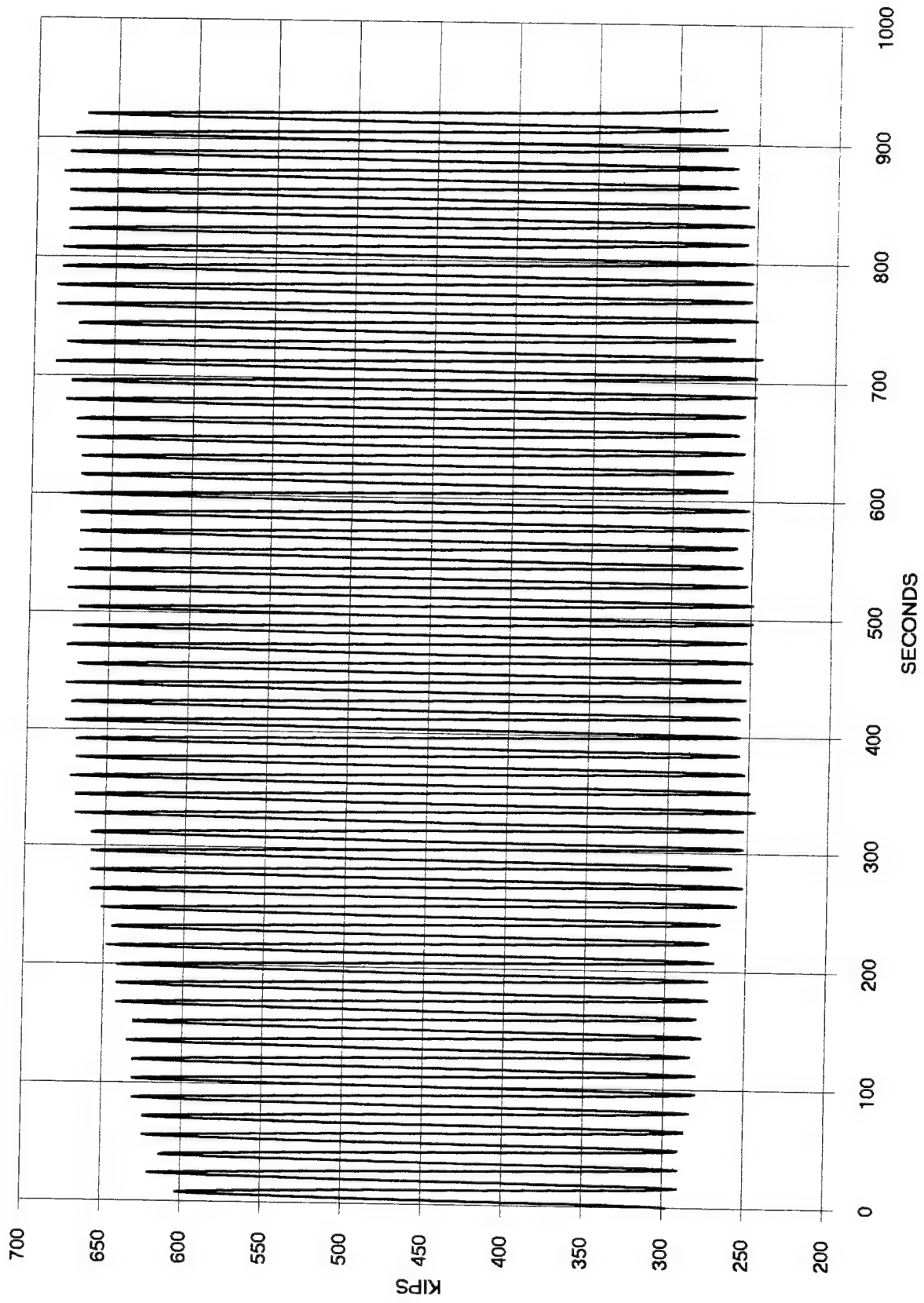
A534- BT-1 THP (DRY)



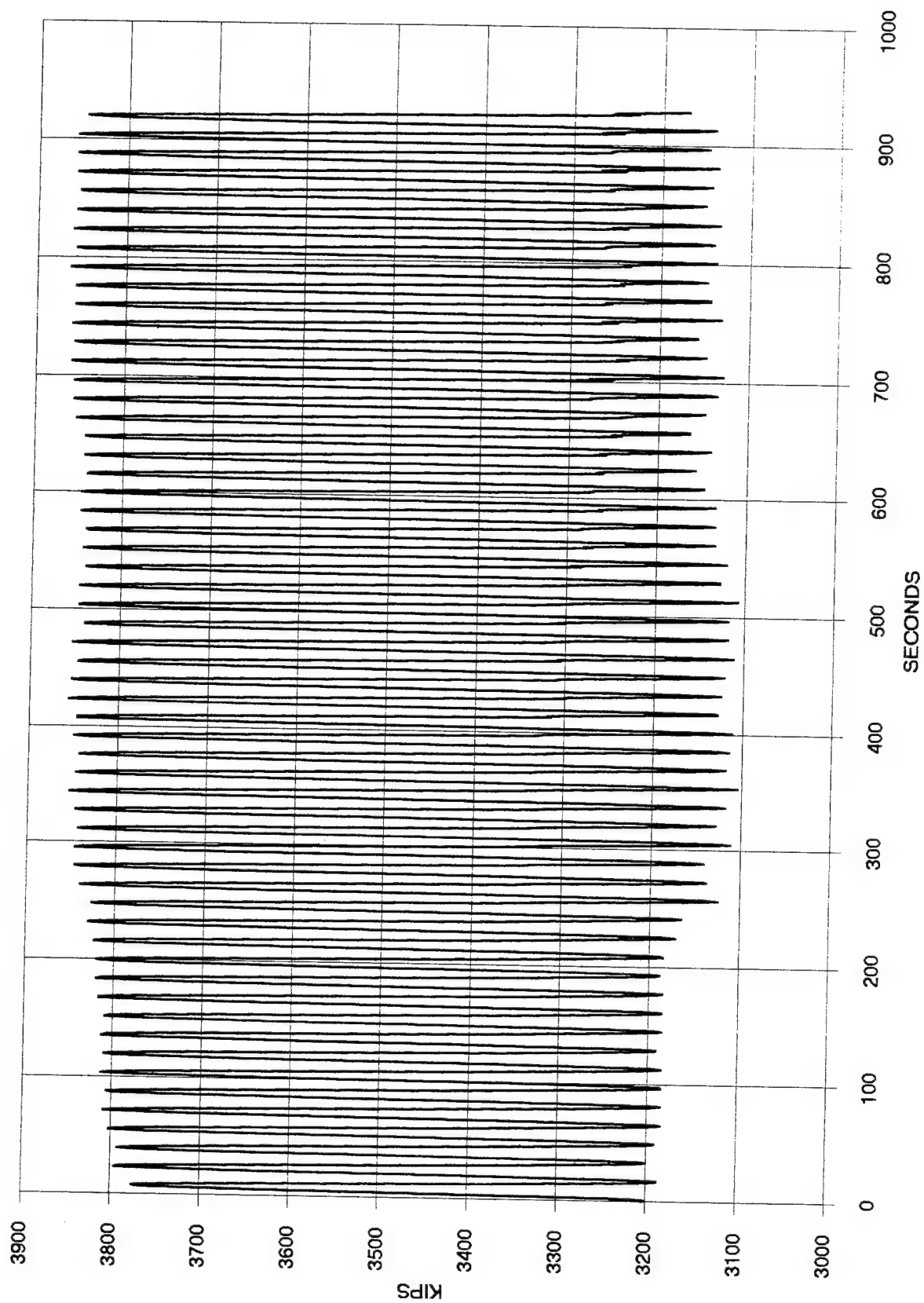
A534 - BT-2 THP (INV. CONE)



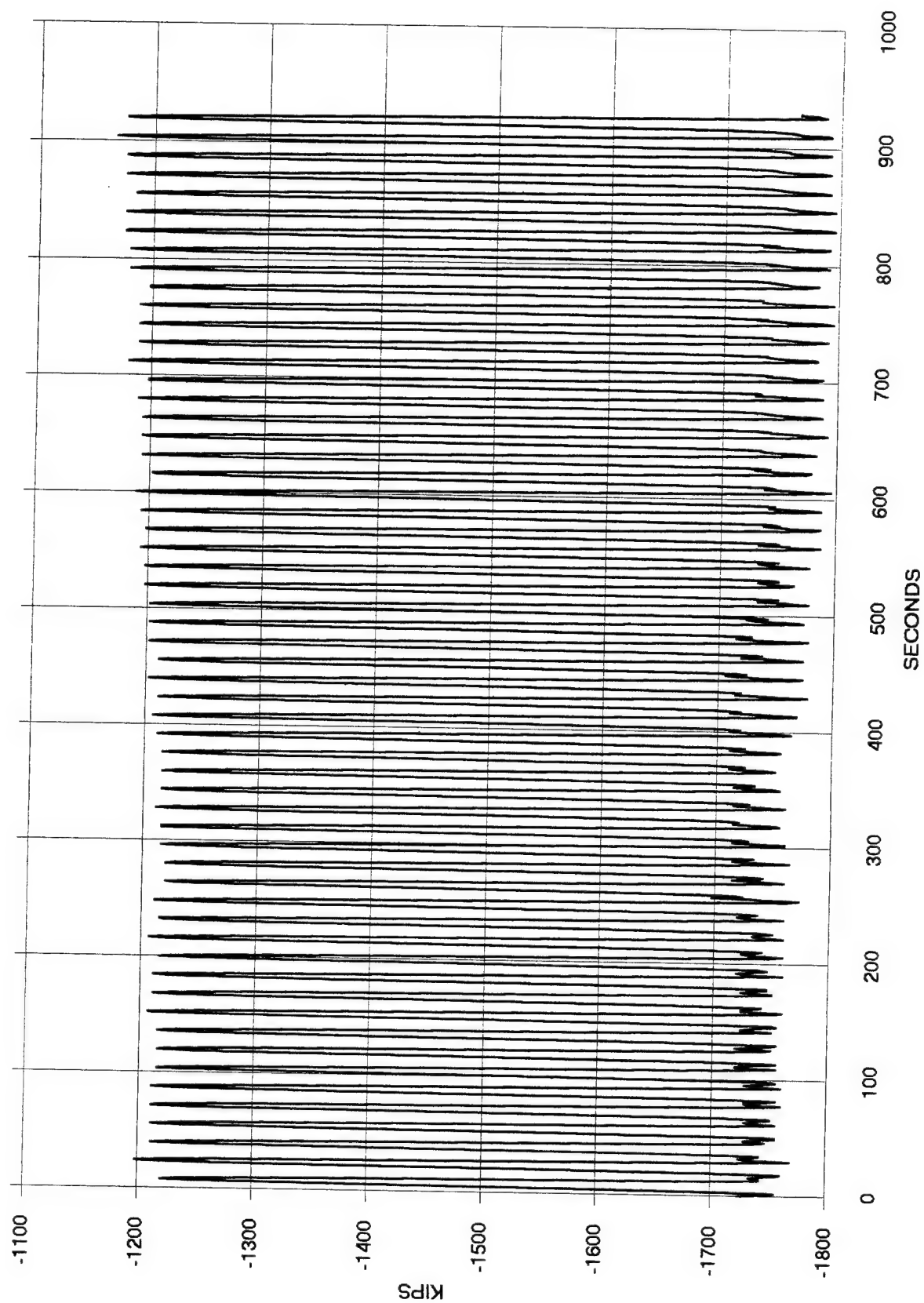
A534 - BT-3 THP (HOUR GLASS)



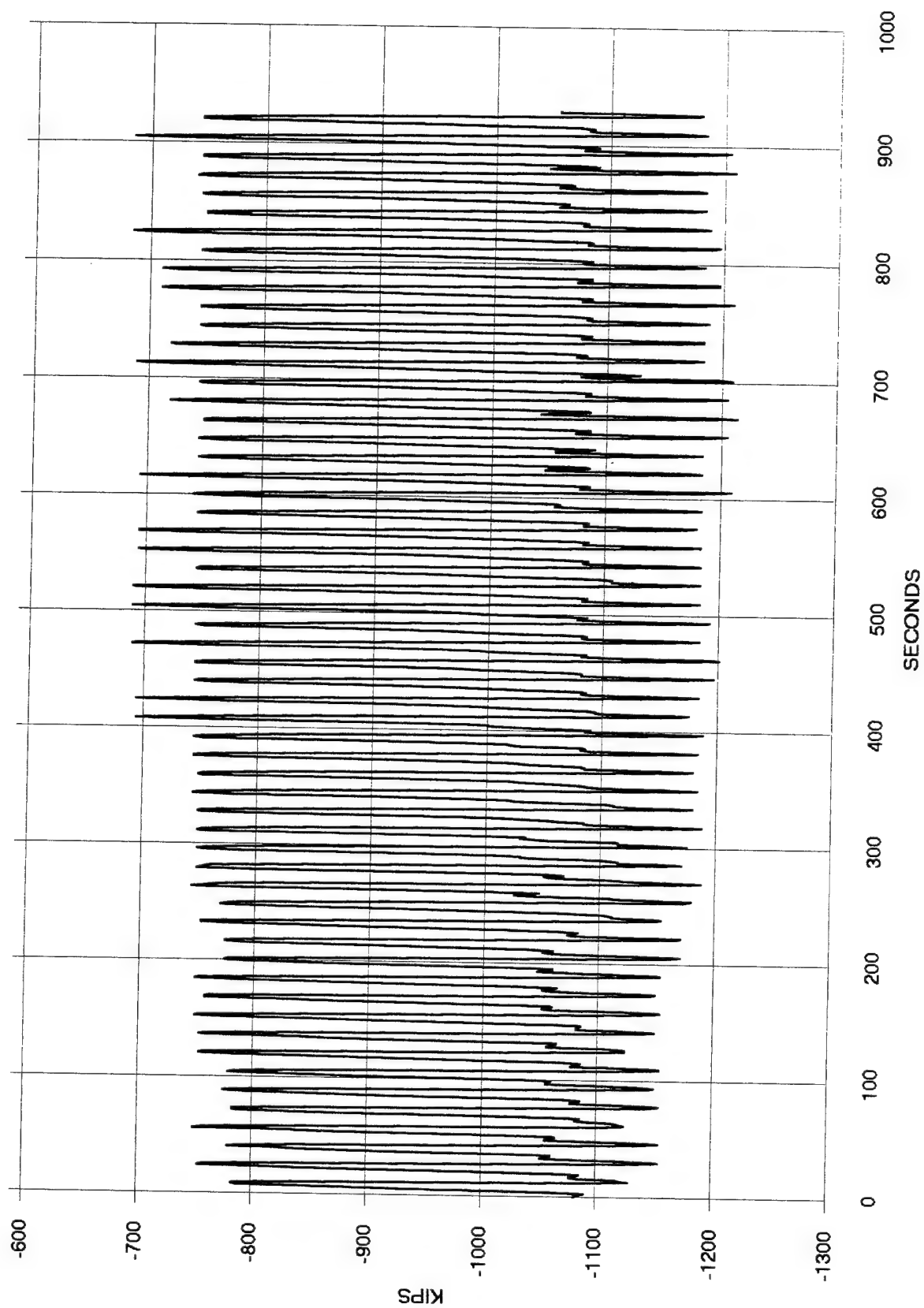
A534 - BT-4 THP (SEGMENTED)



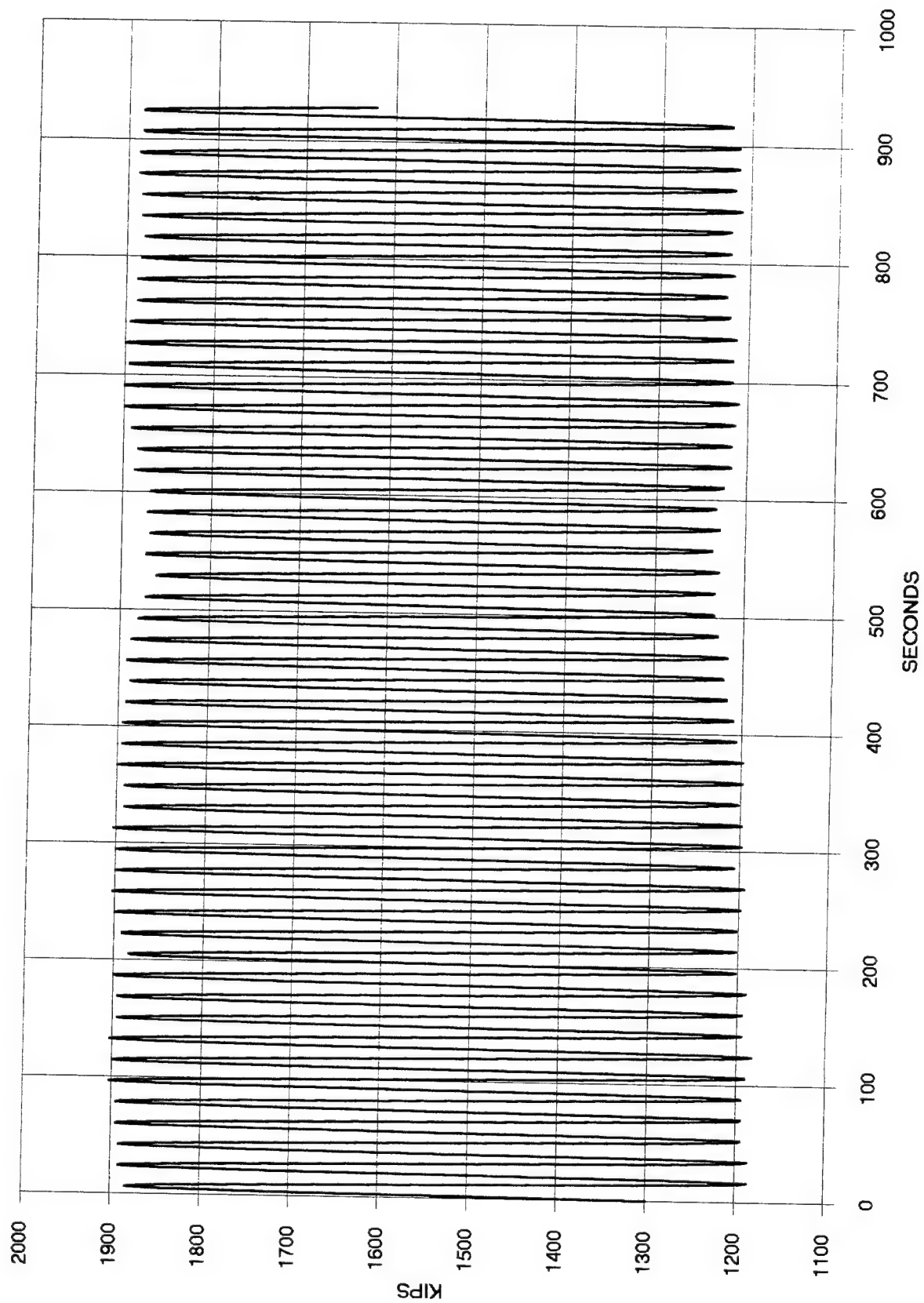
A534 - BT-5 THP (LINK BUOY)



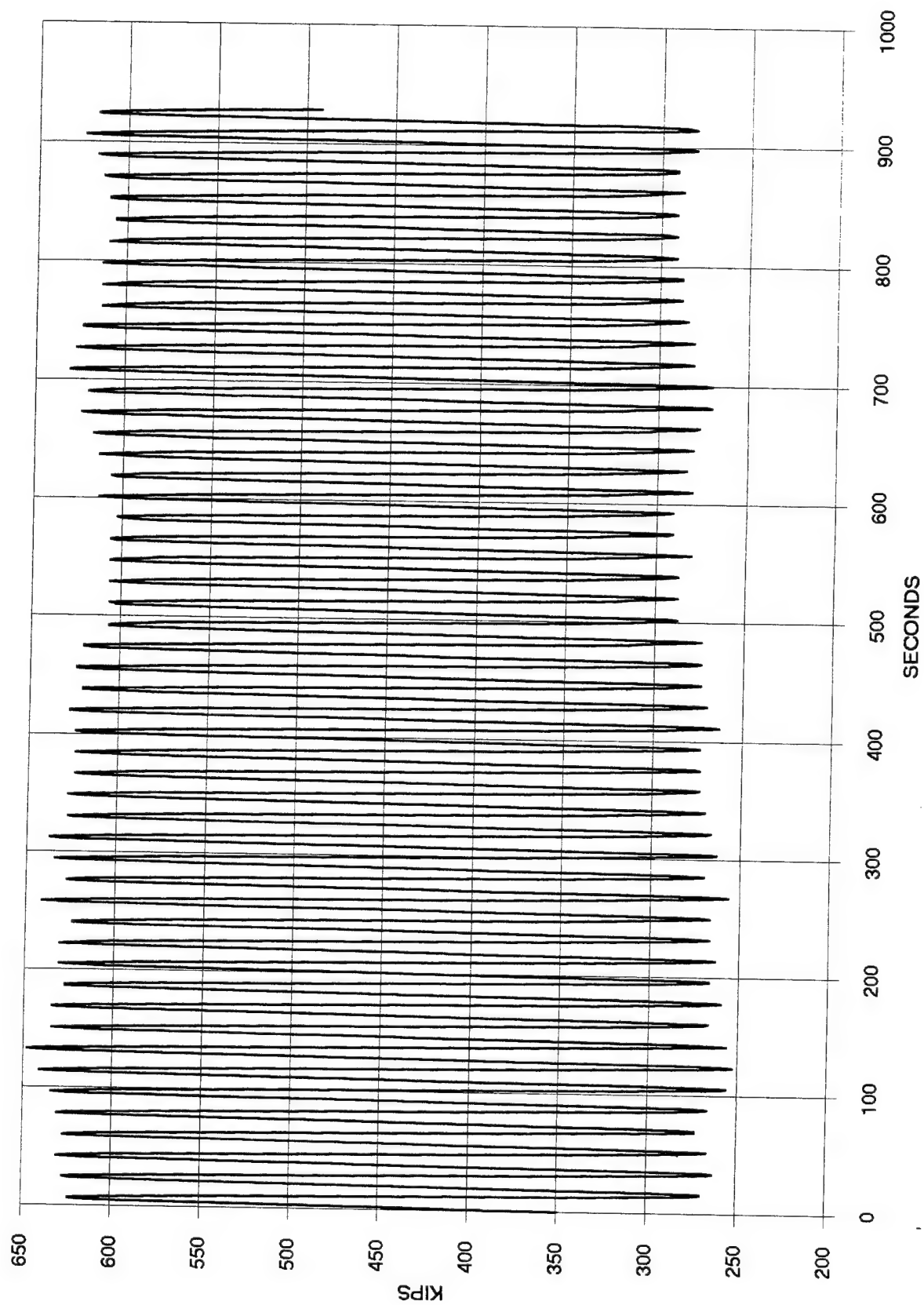
A534 - BT-6 THP (CONST. TENSION)



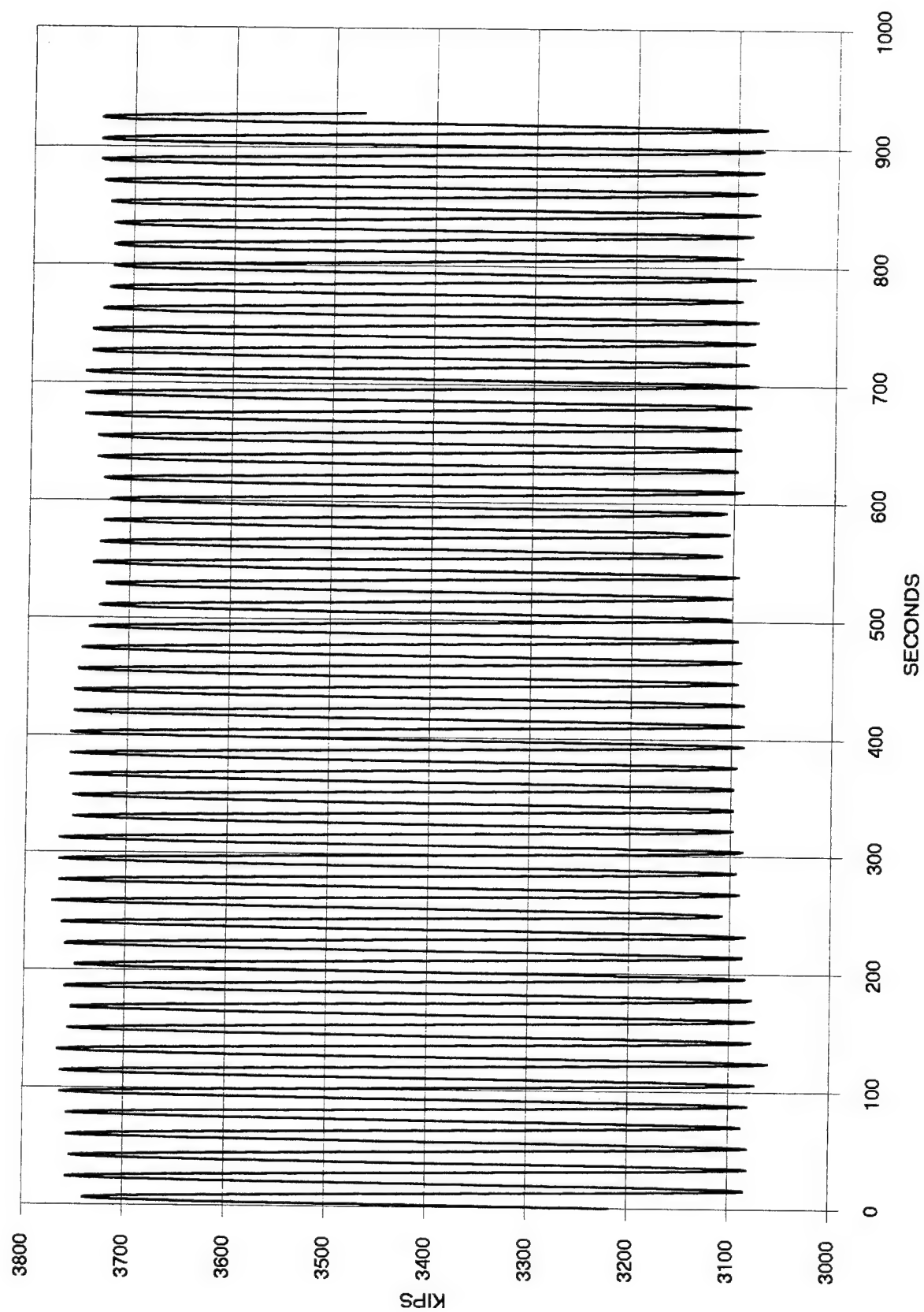
A535 - BT-1 THP (DRY)



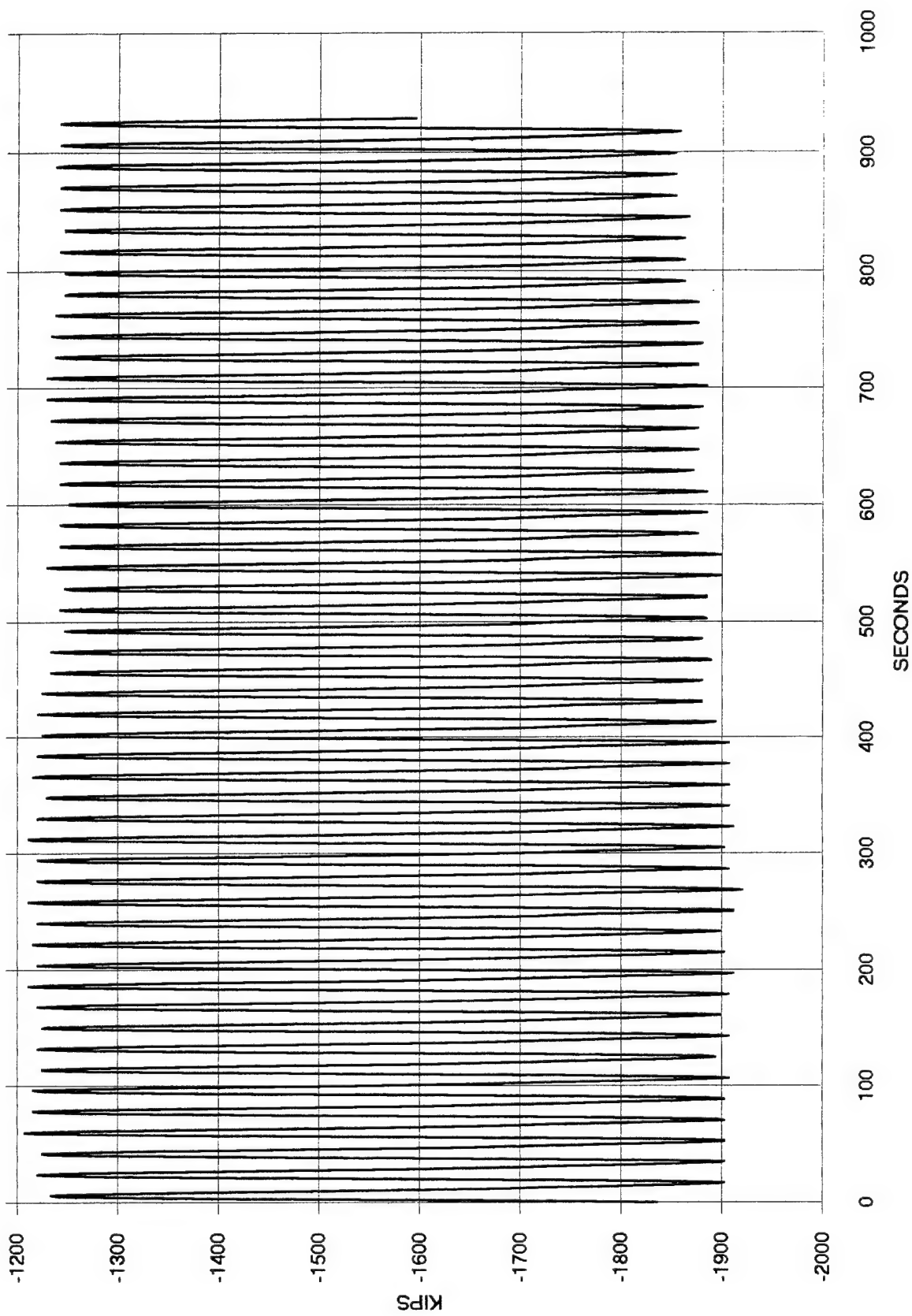
A535 - BT-3 THP (HOUR GLASS)



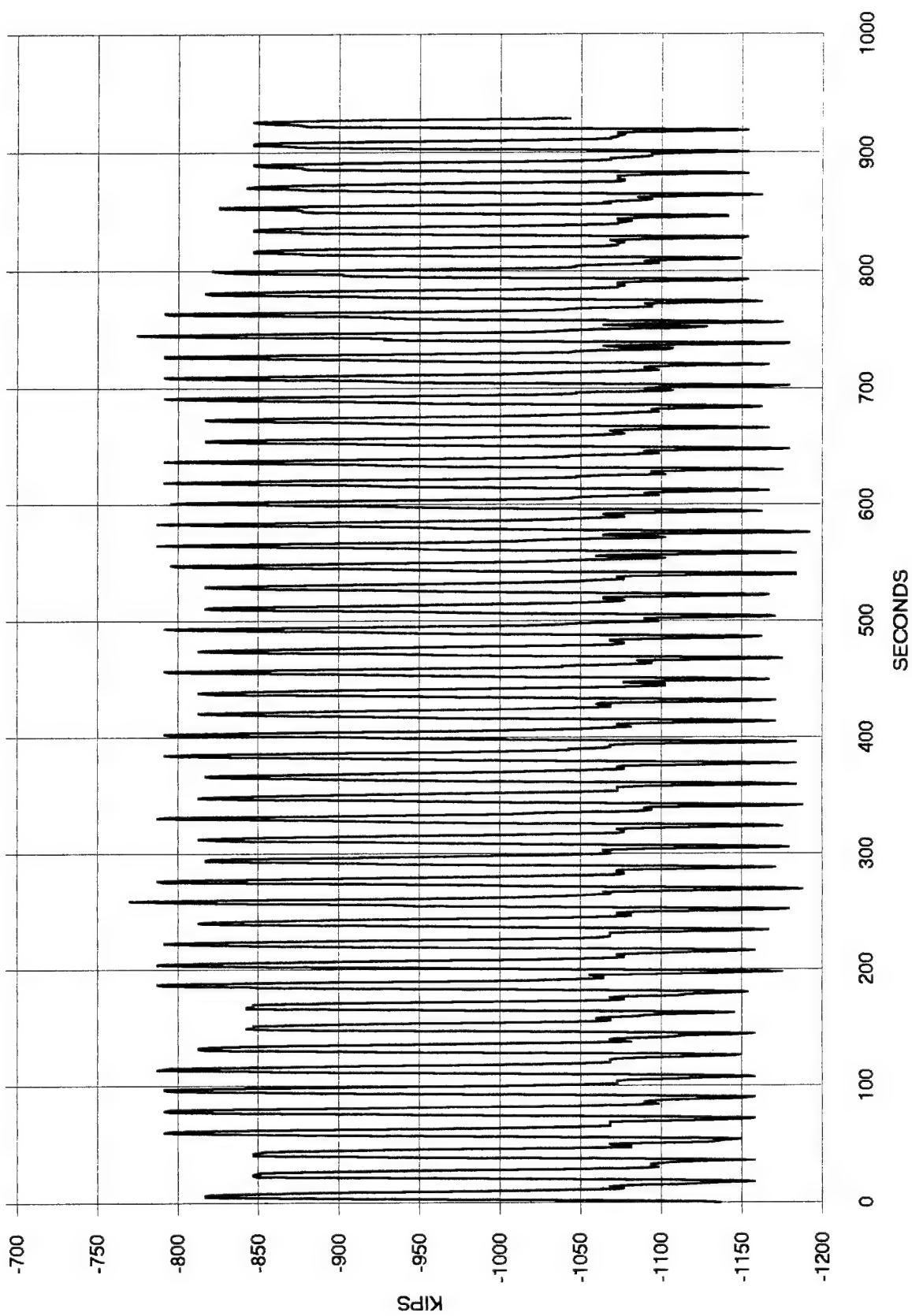
A535 - BT-4 THP (SEGMENTED)



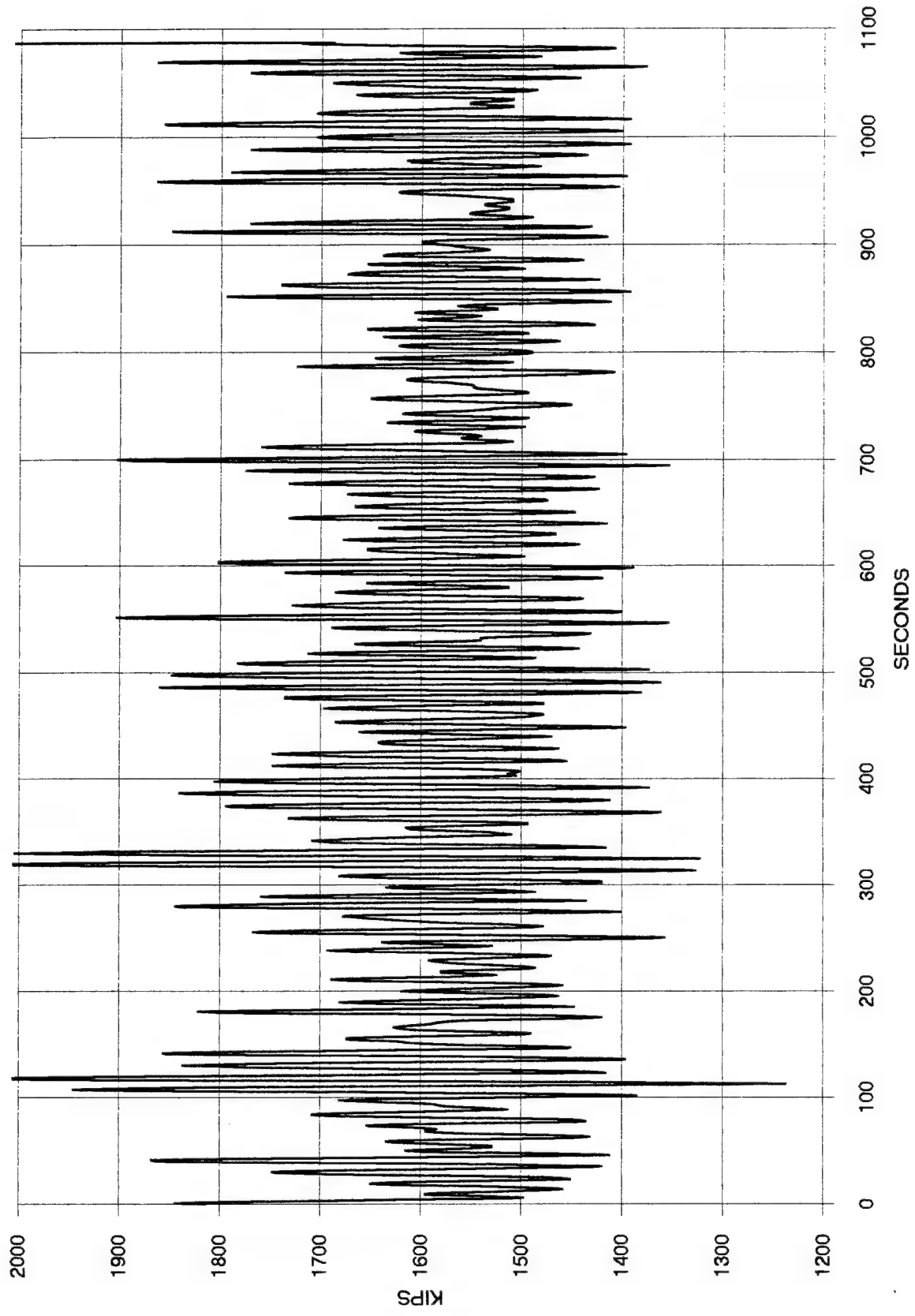
A535 - BT-5 THP (LINK BUOY)



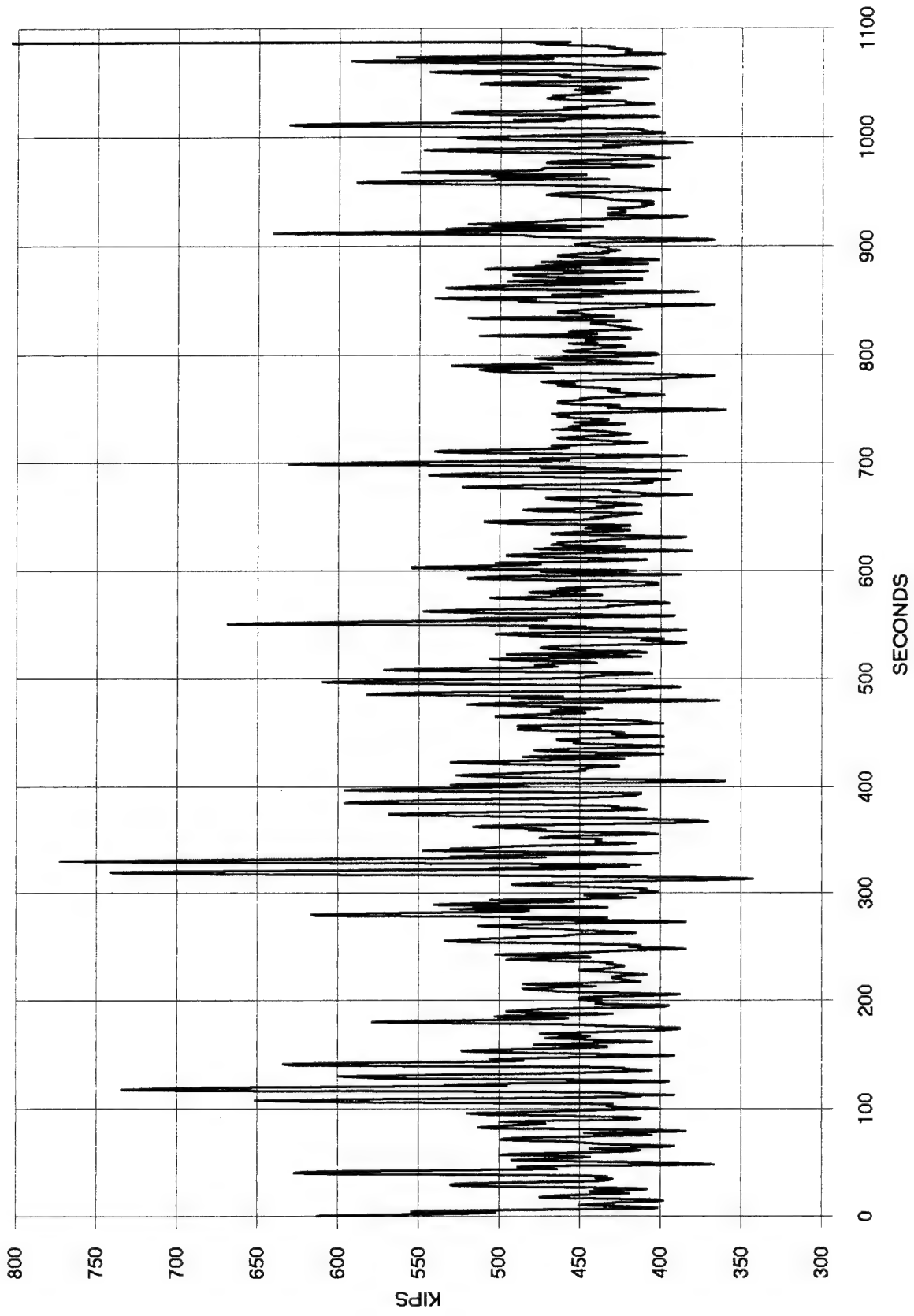
A535 - BT-6 THP (CONST. TENSION)



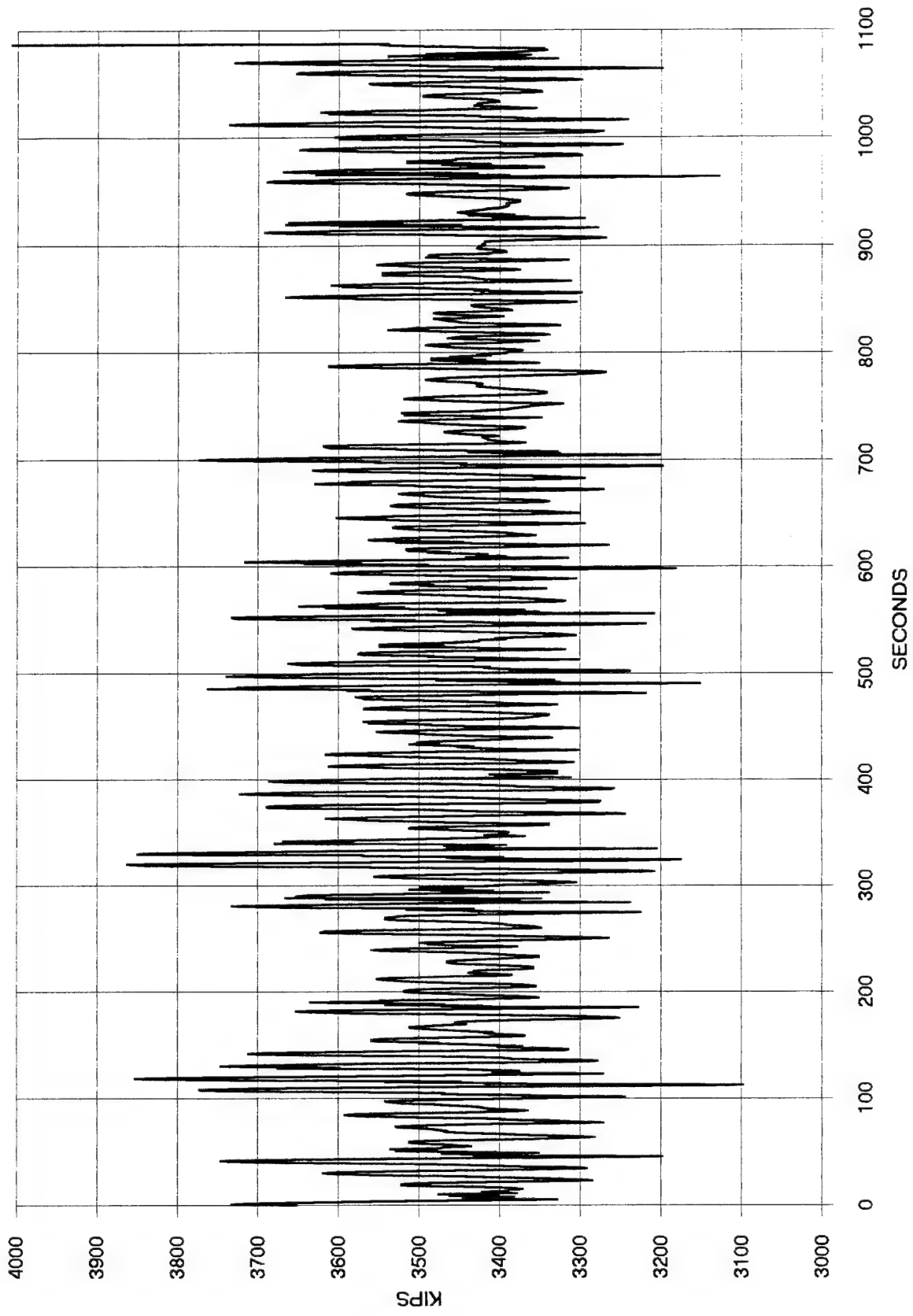
A536 - BT-1 THP (DRY)



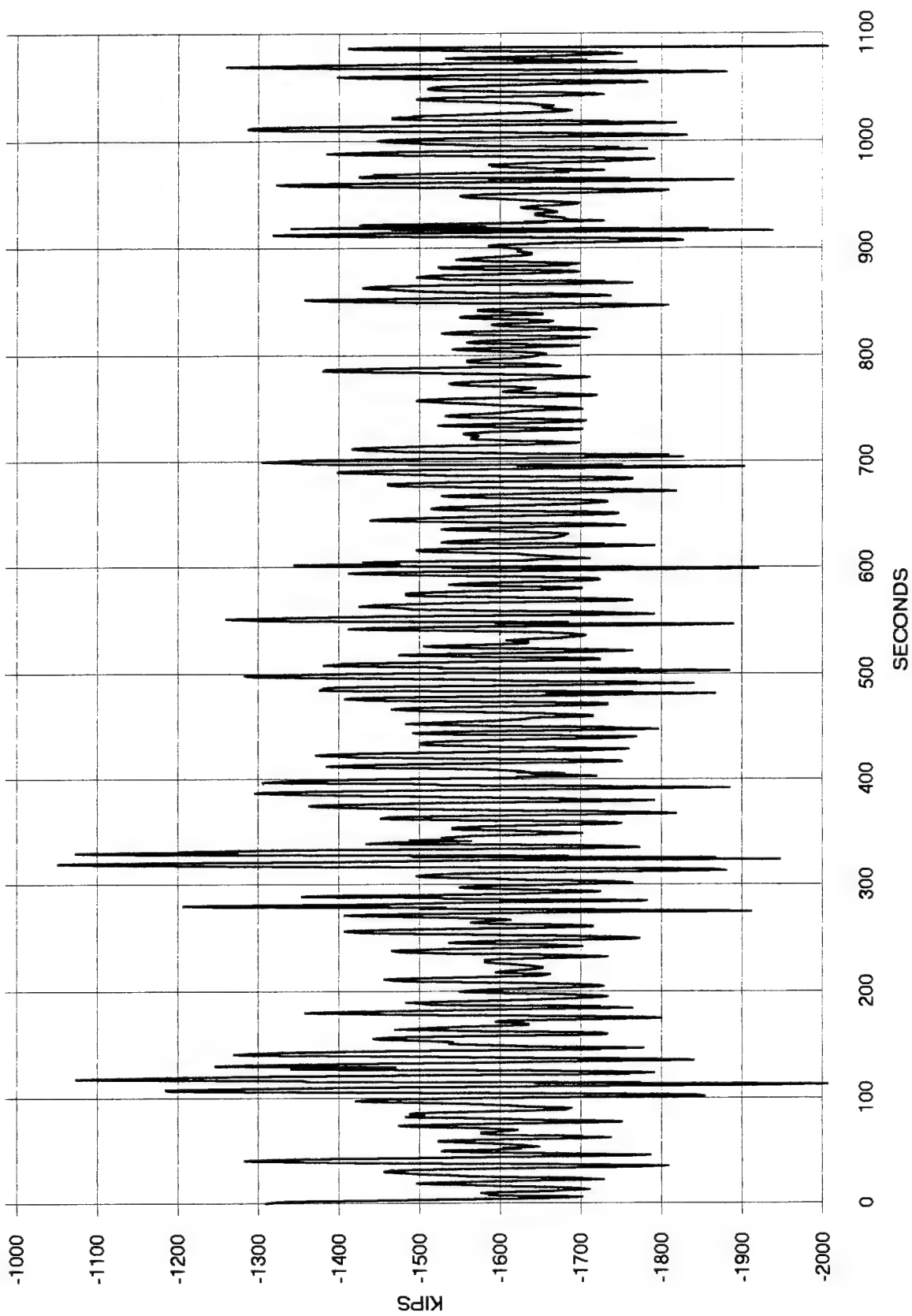
A536 - BT-3 THP (HOUR GLASS)



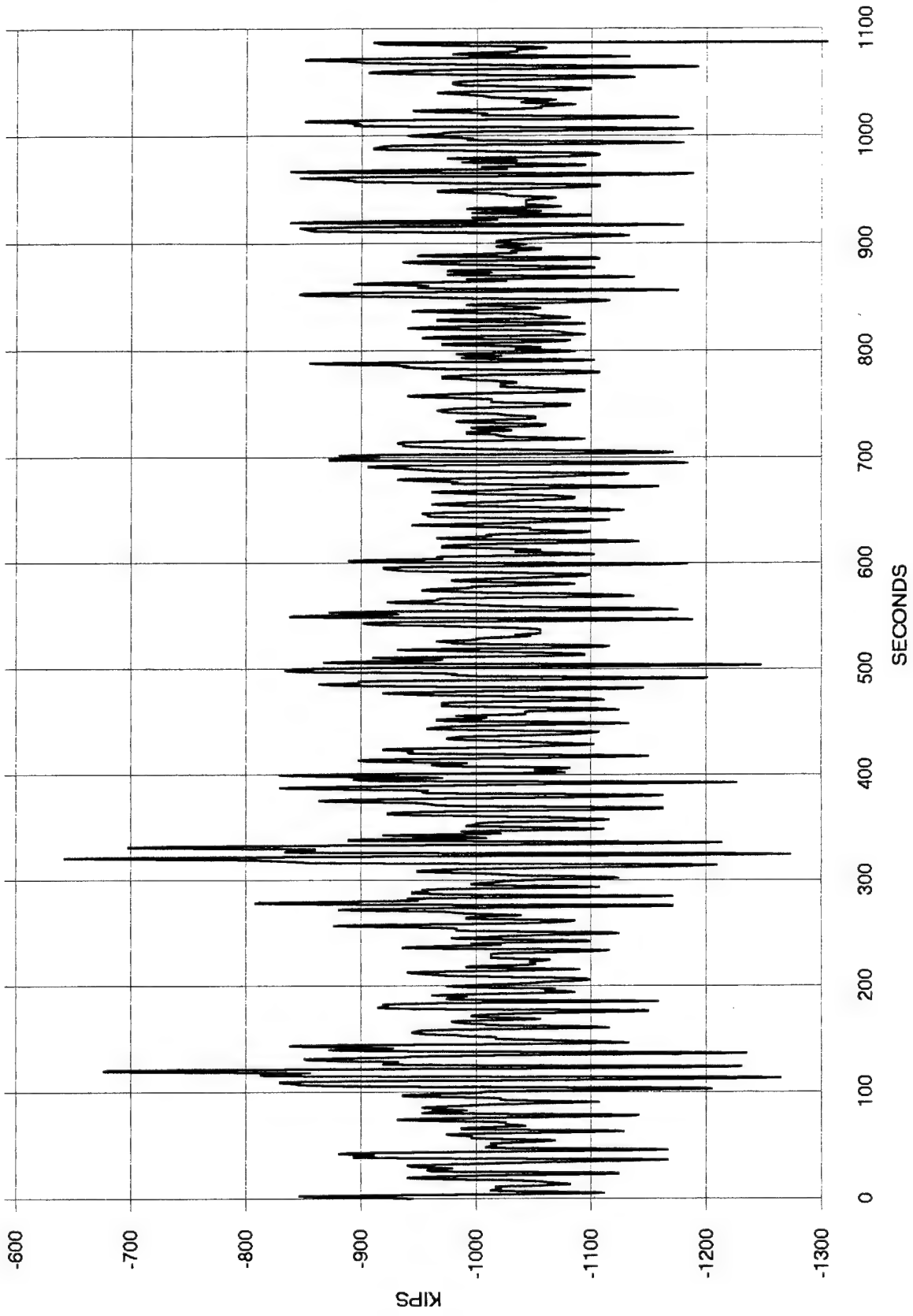
A536 - BT-4 THP (SEGMENTED)



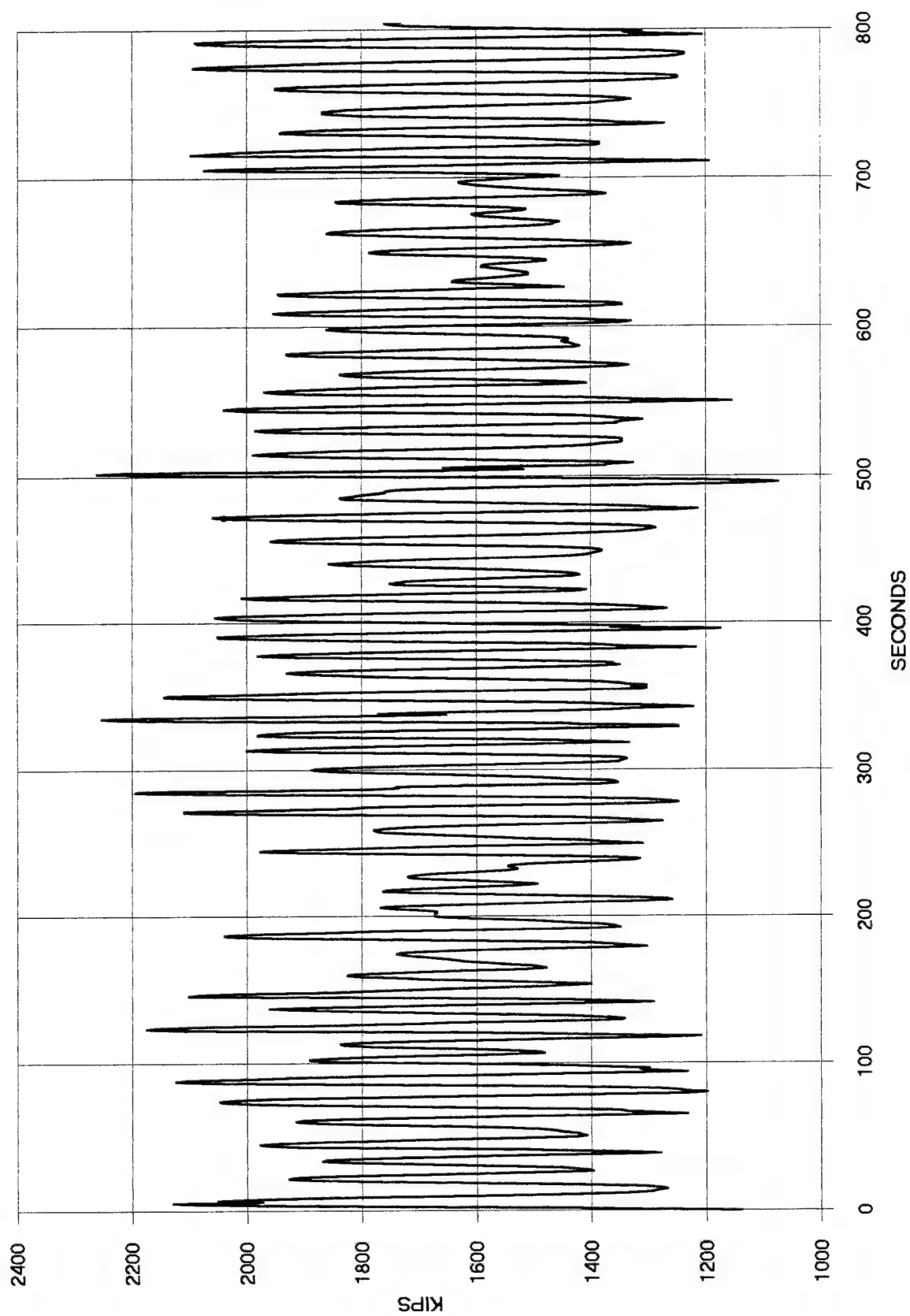
A536 - BT-5 THP (LINK BUOY)



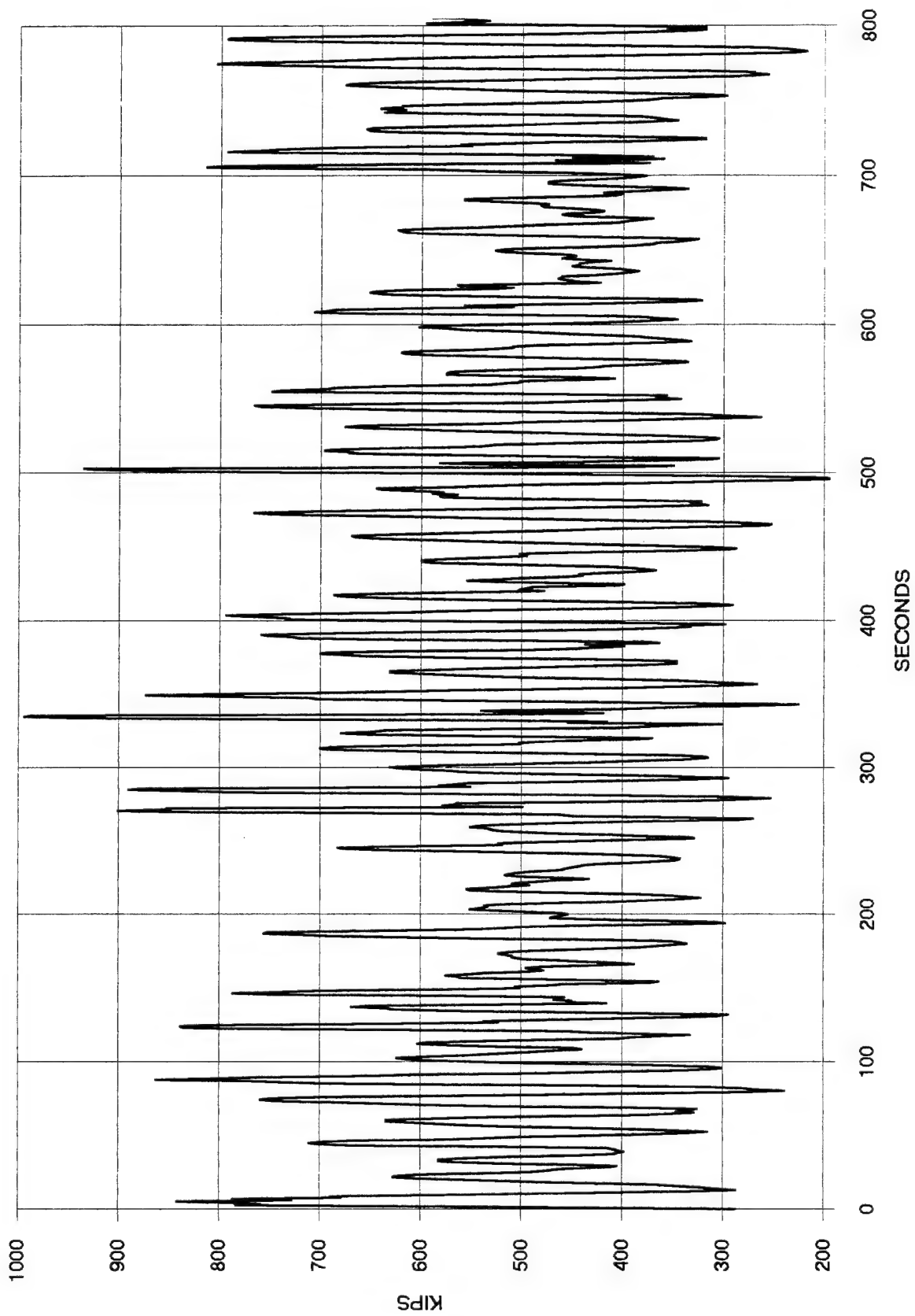
6
A532 - BT-6 THP (CONST. TENSION)



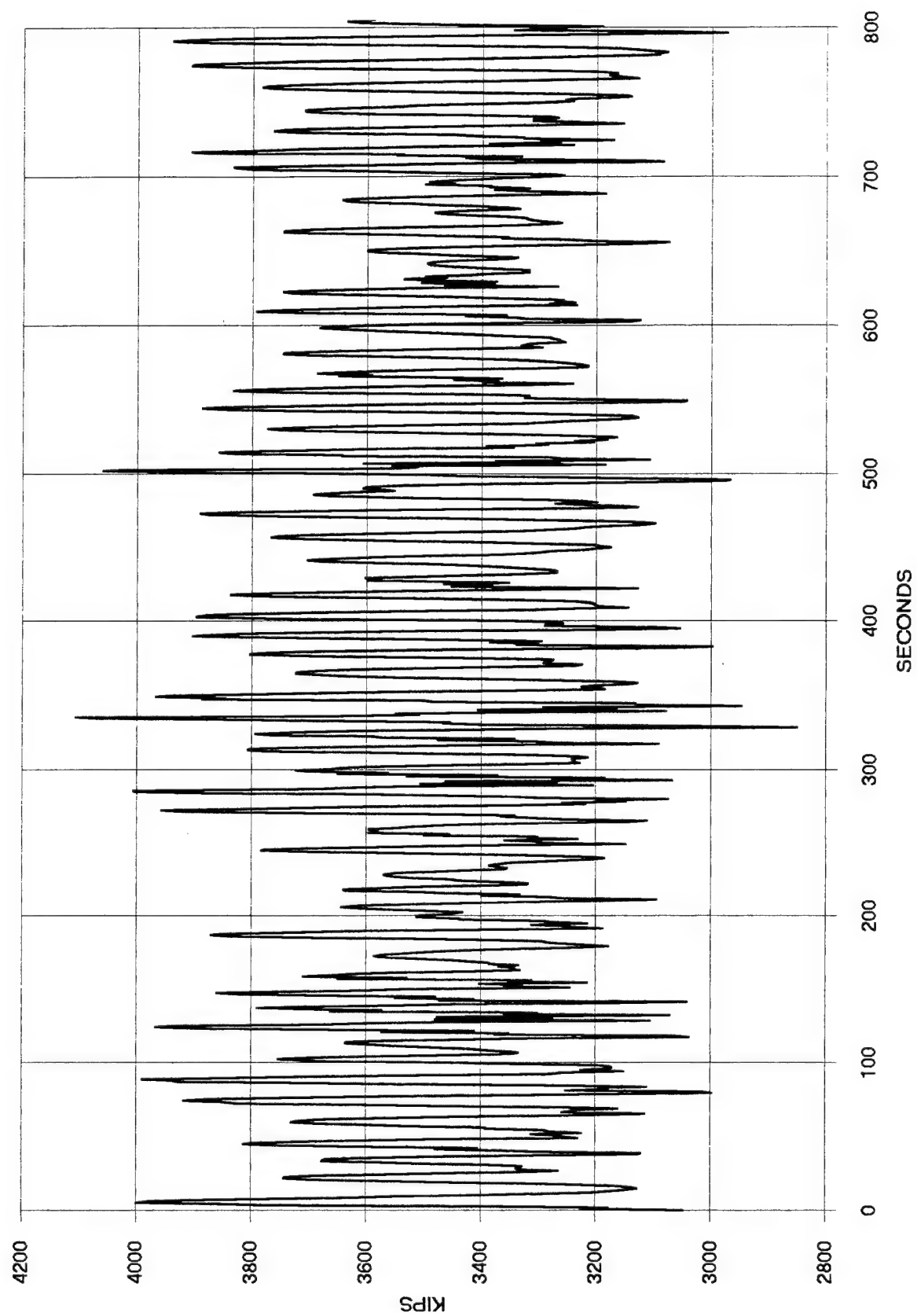
A537 - BT-1 THP (DRY)



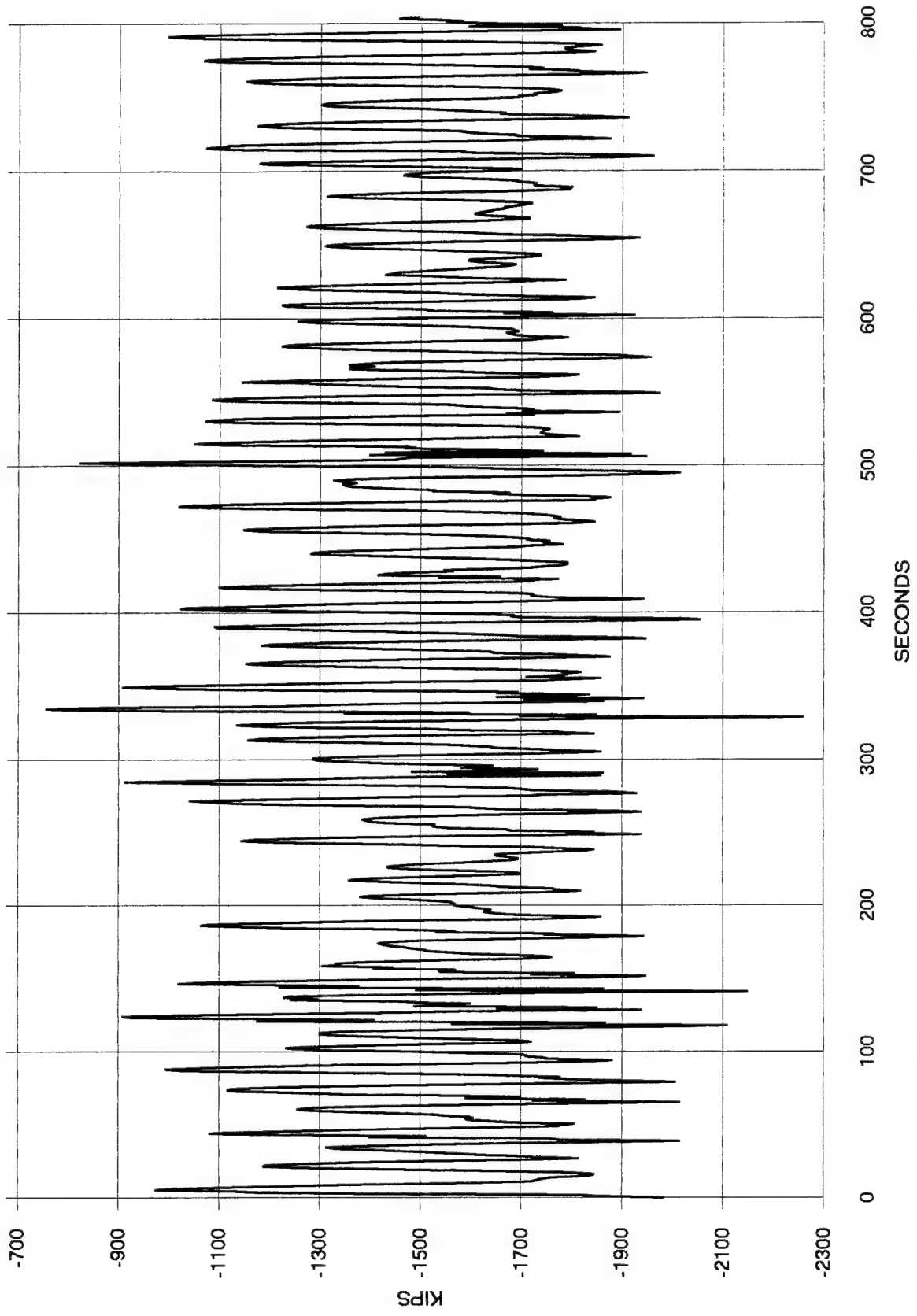
A537 - BT-3 THP (HOUR GLASS)



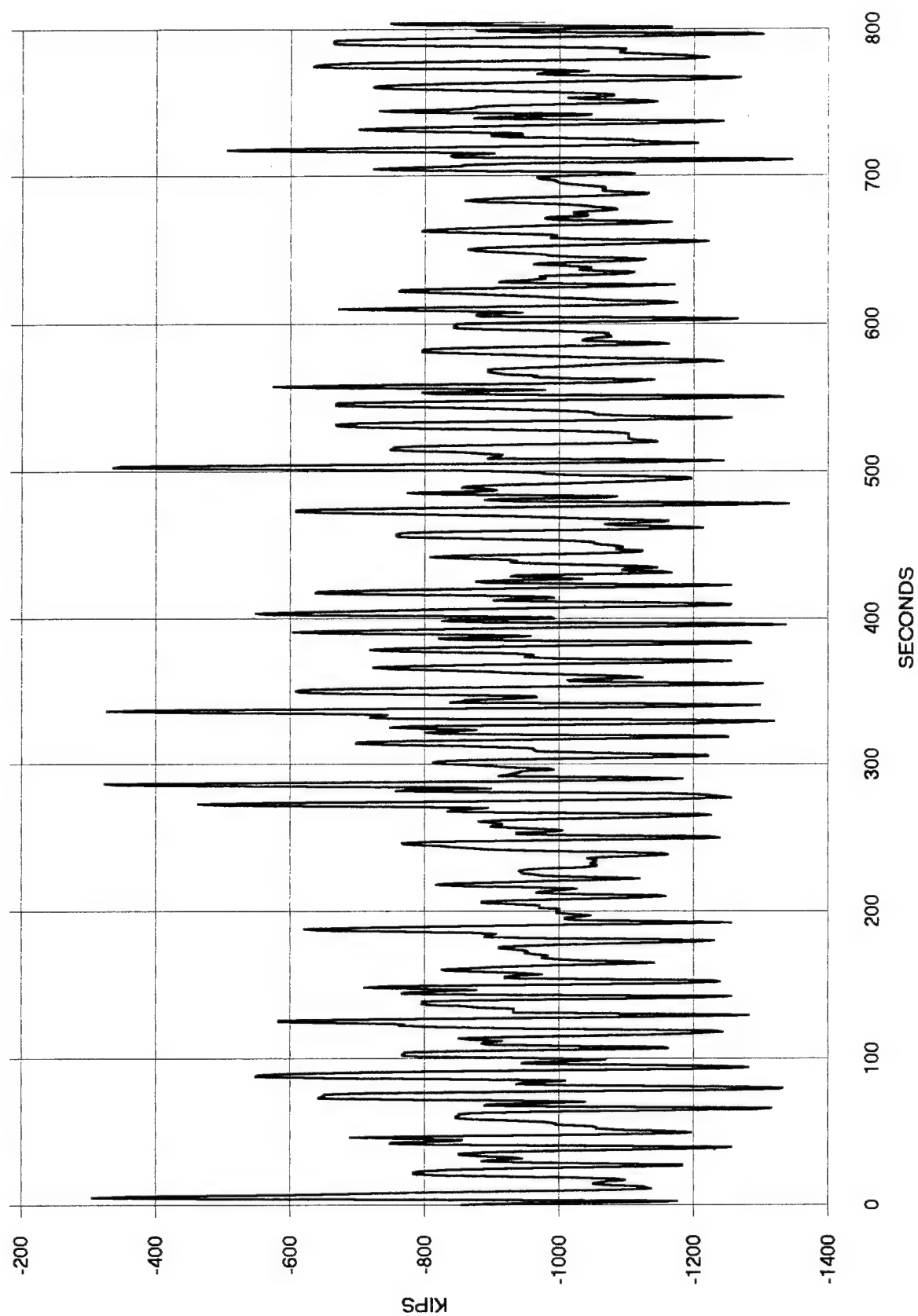
A537 - BT-4 THP (SEGMENTED)



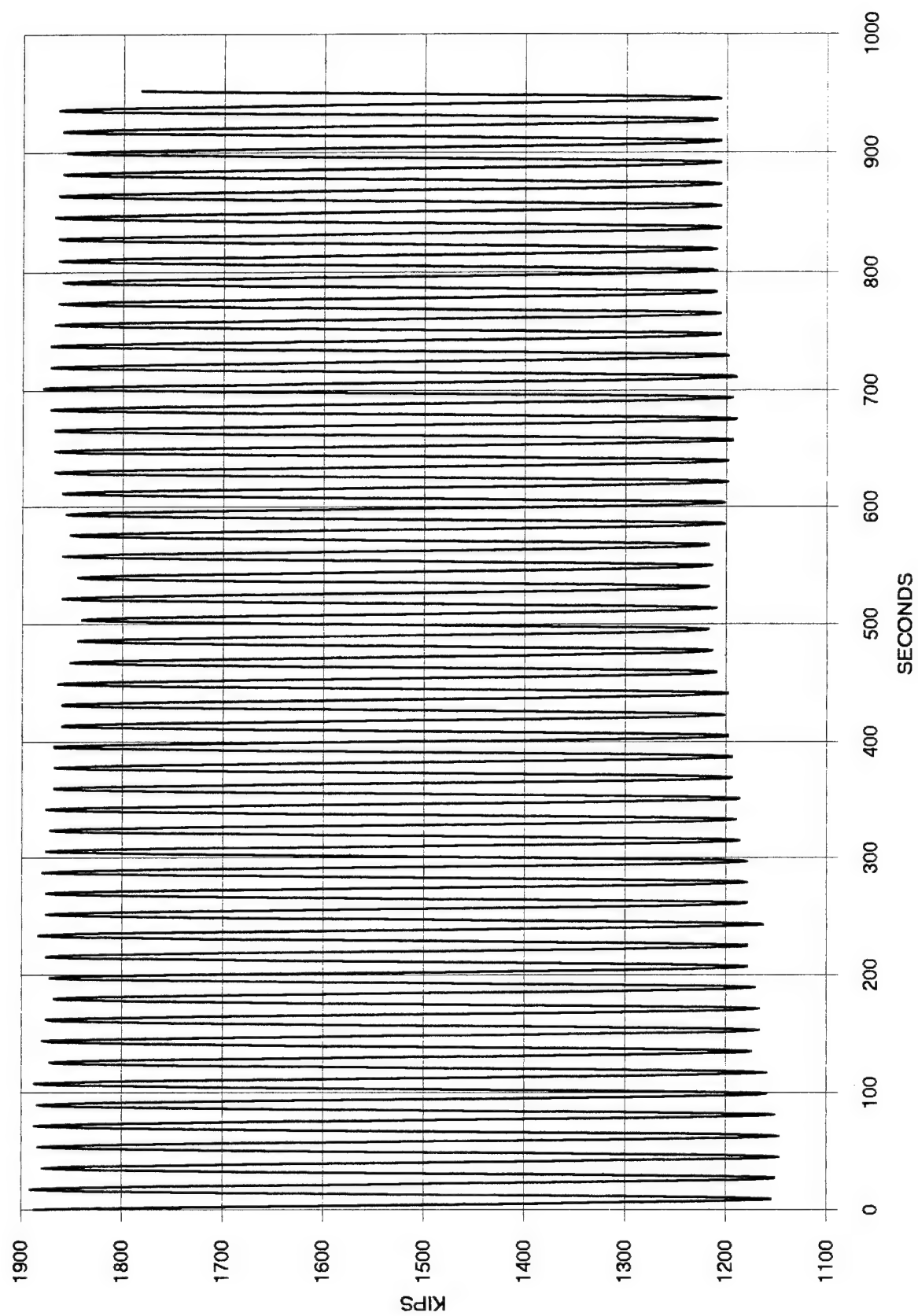
A537 - BT-5 THP (LINK BUOY)



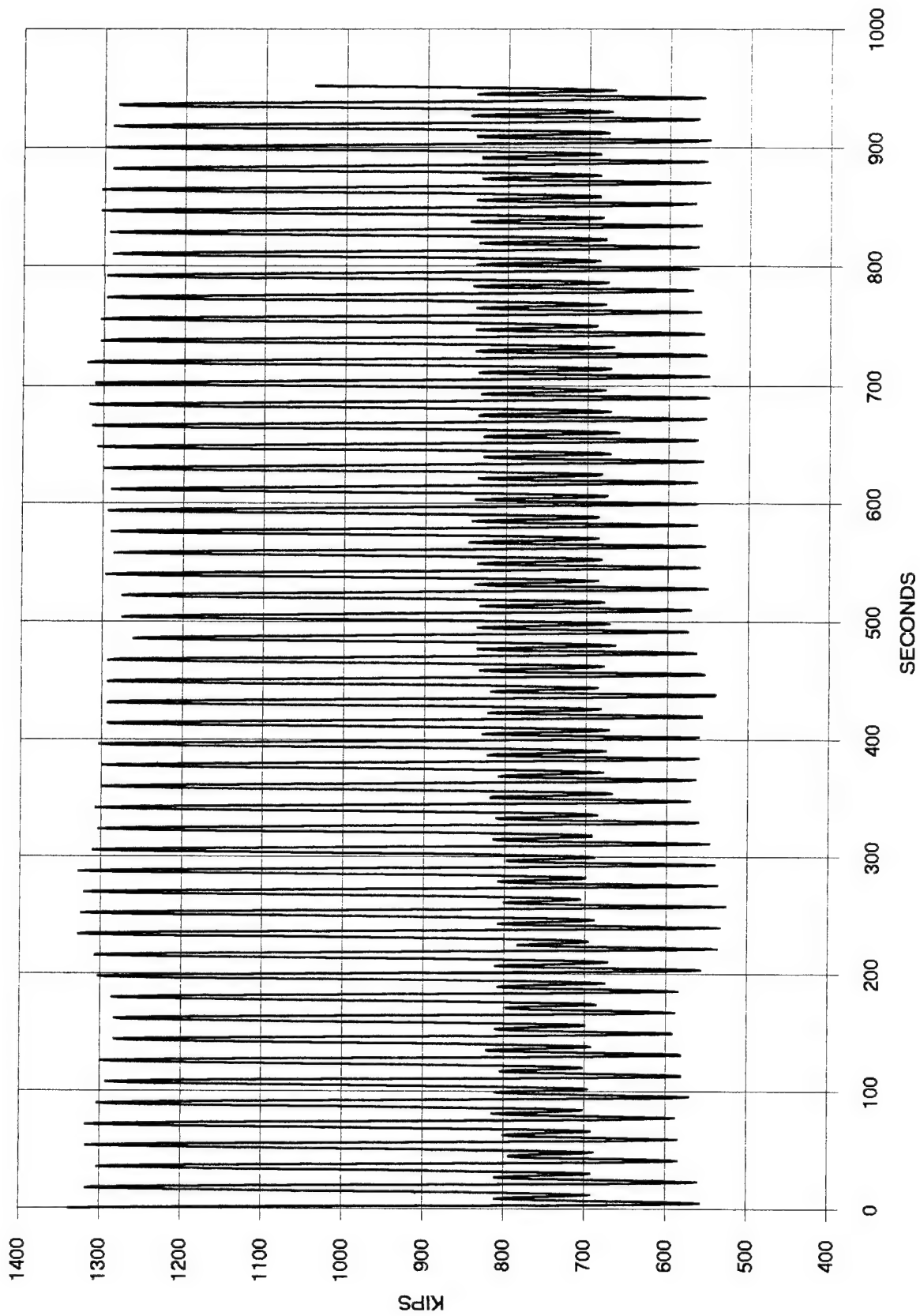
A537 - BT-6 THP (CONST. TENSION)



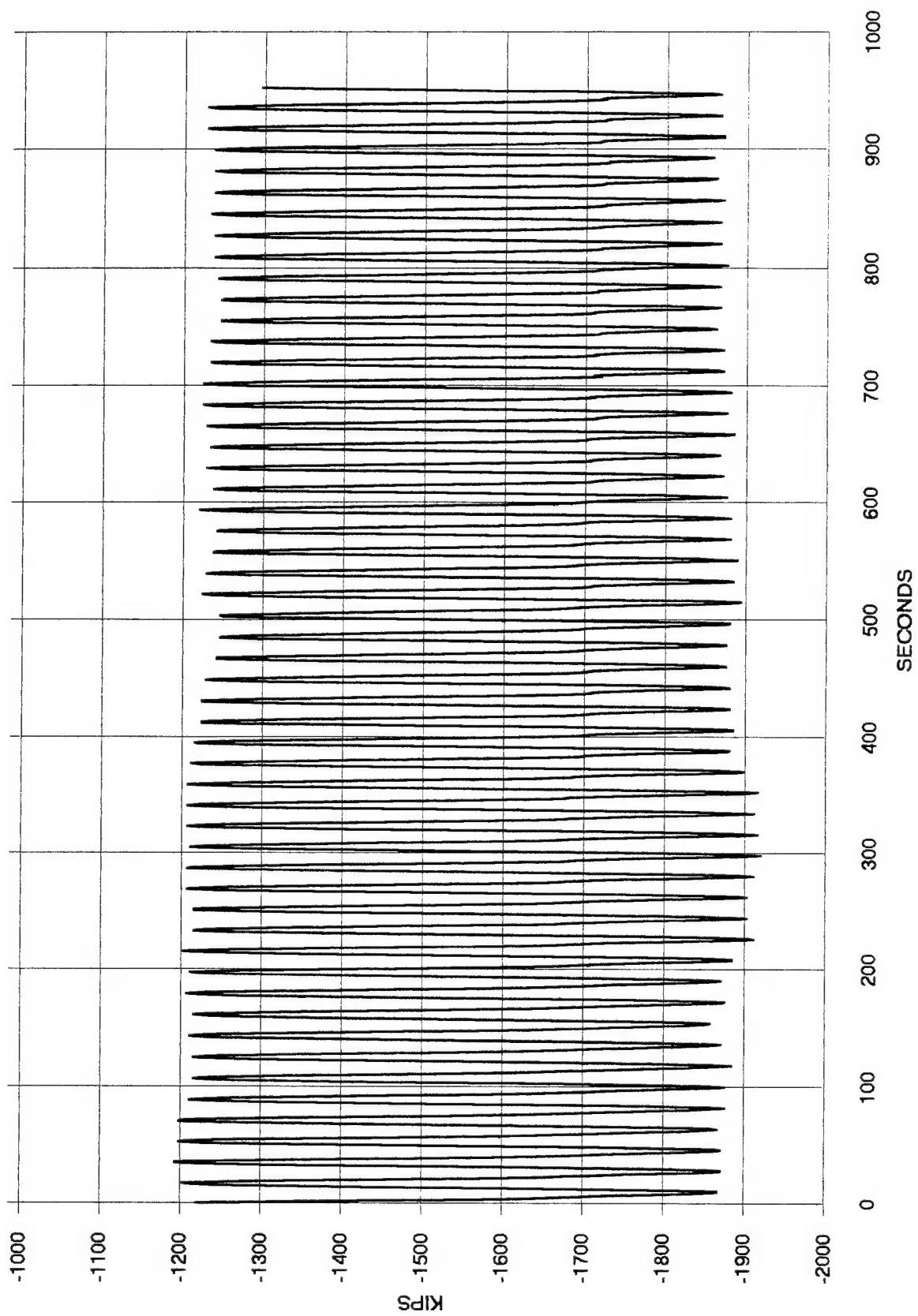
A538 - BT-1 THP (DRY)



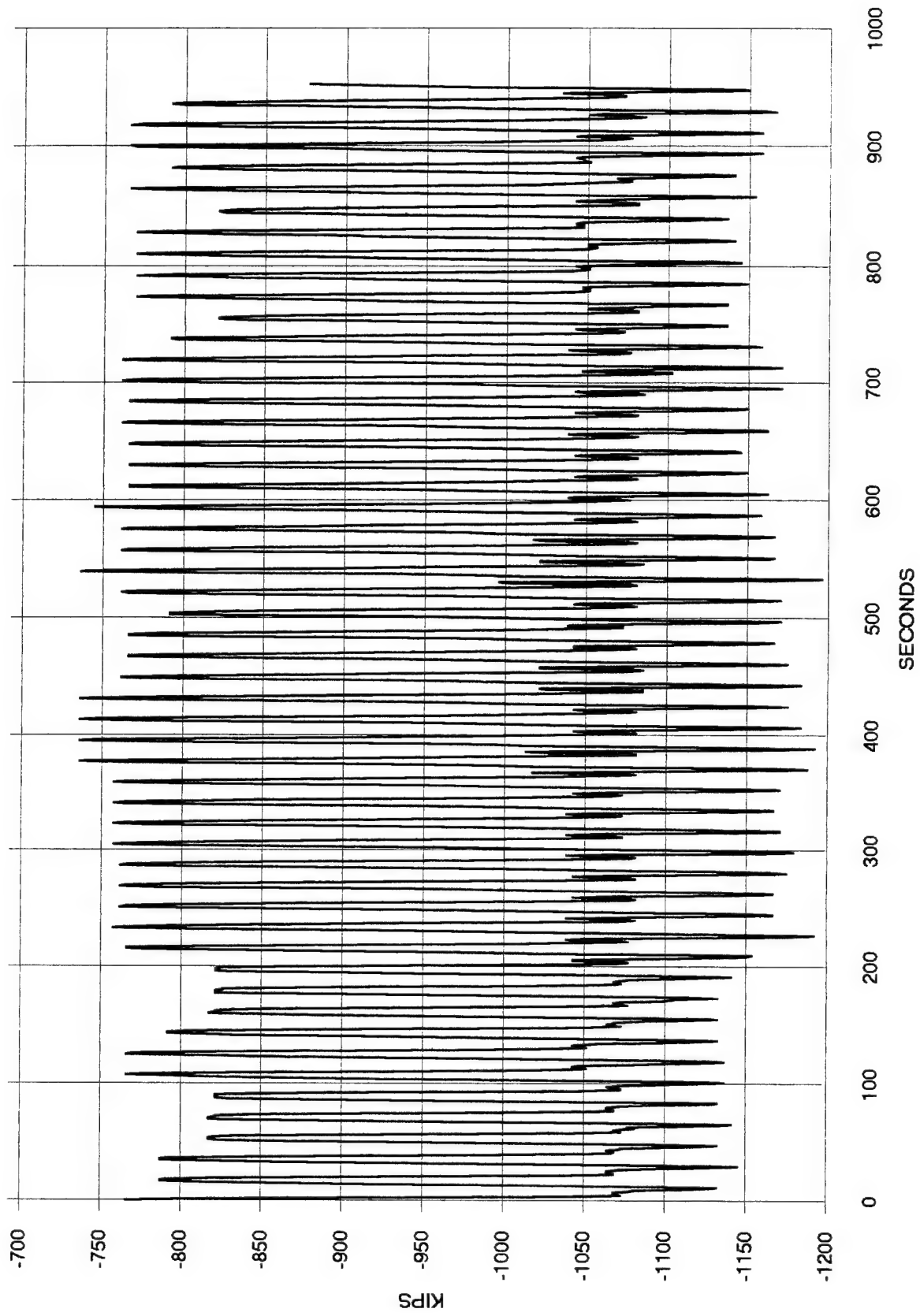
A538- BT-3 THP (INV. CONE)



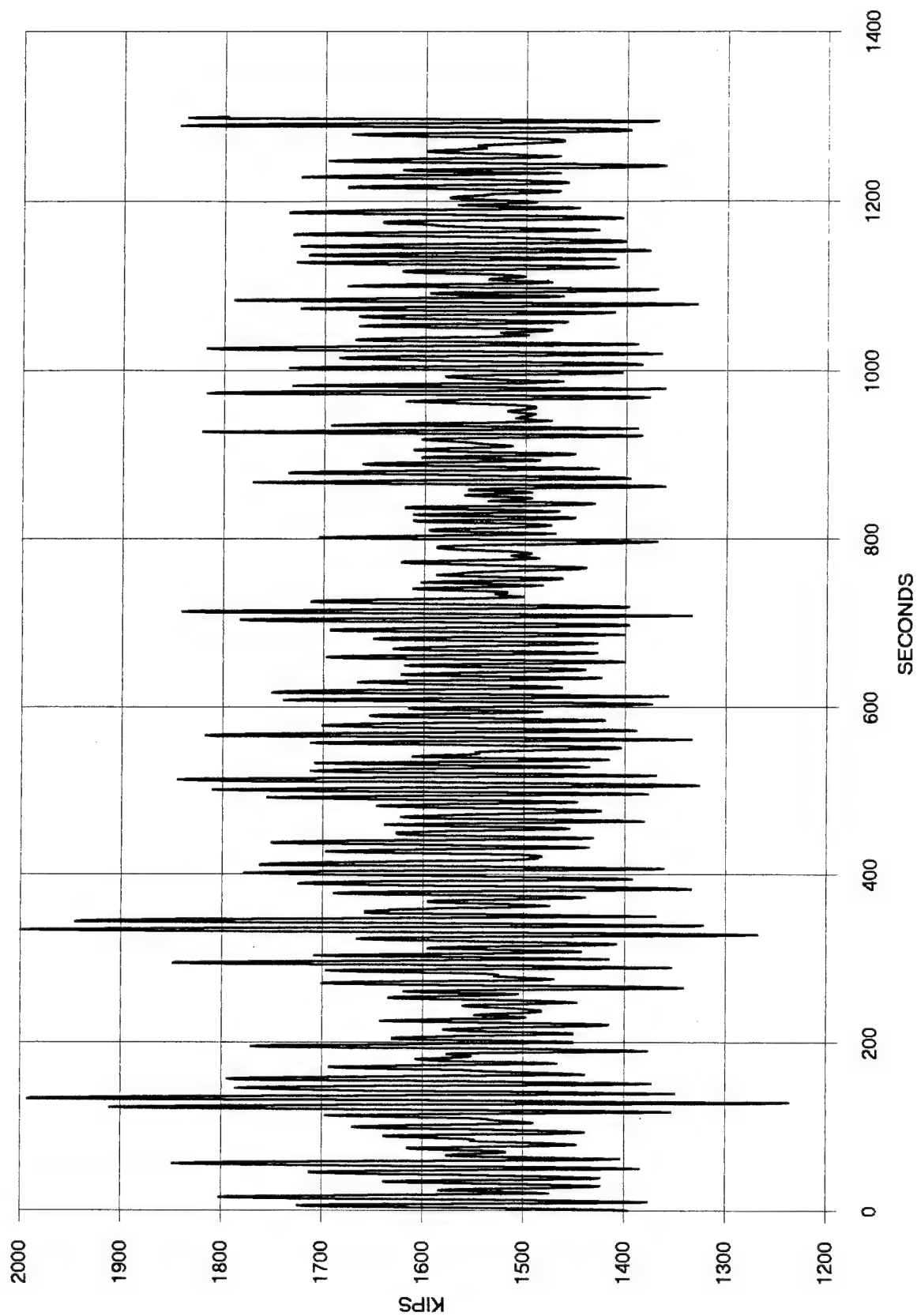
A538 - BT-5 THP (LINK BUOY)



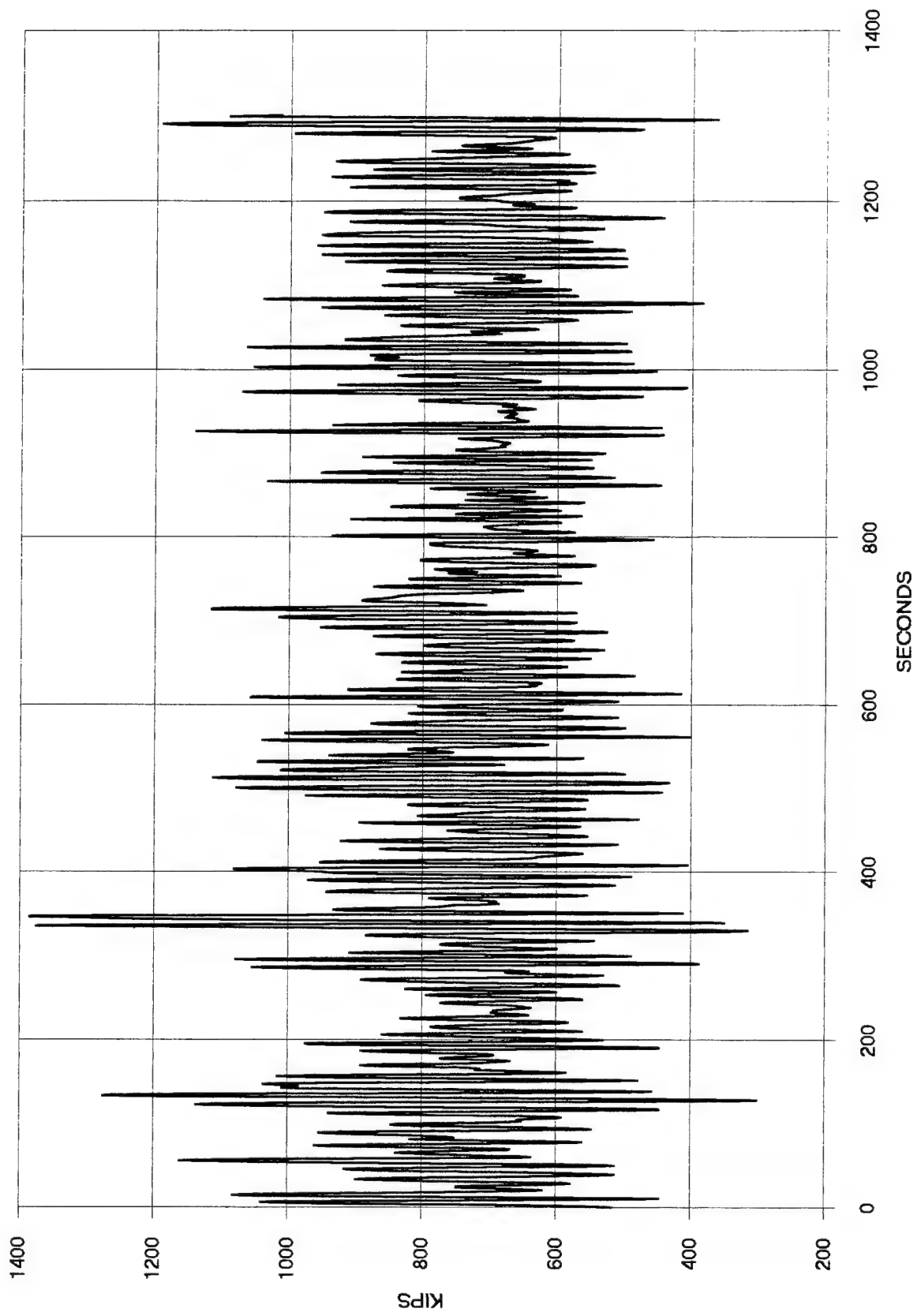
A538 - BT-6 THP (CONST. TENSION)



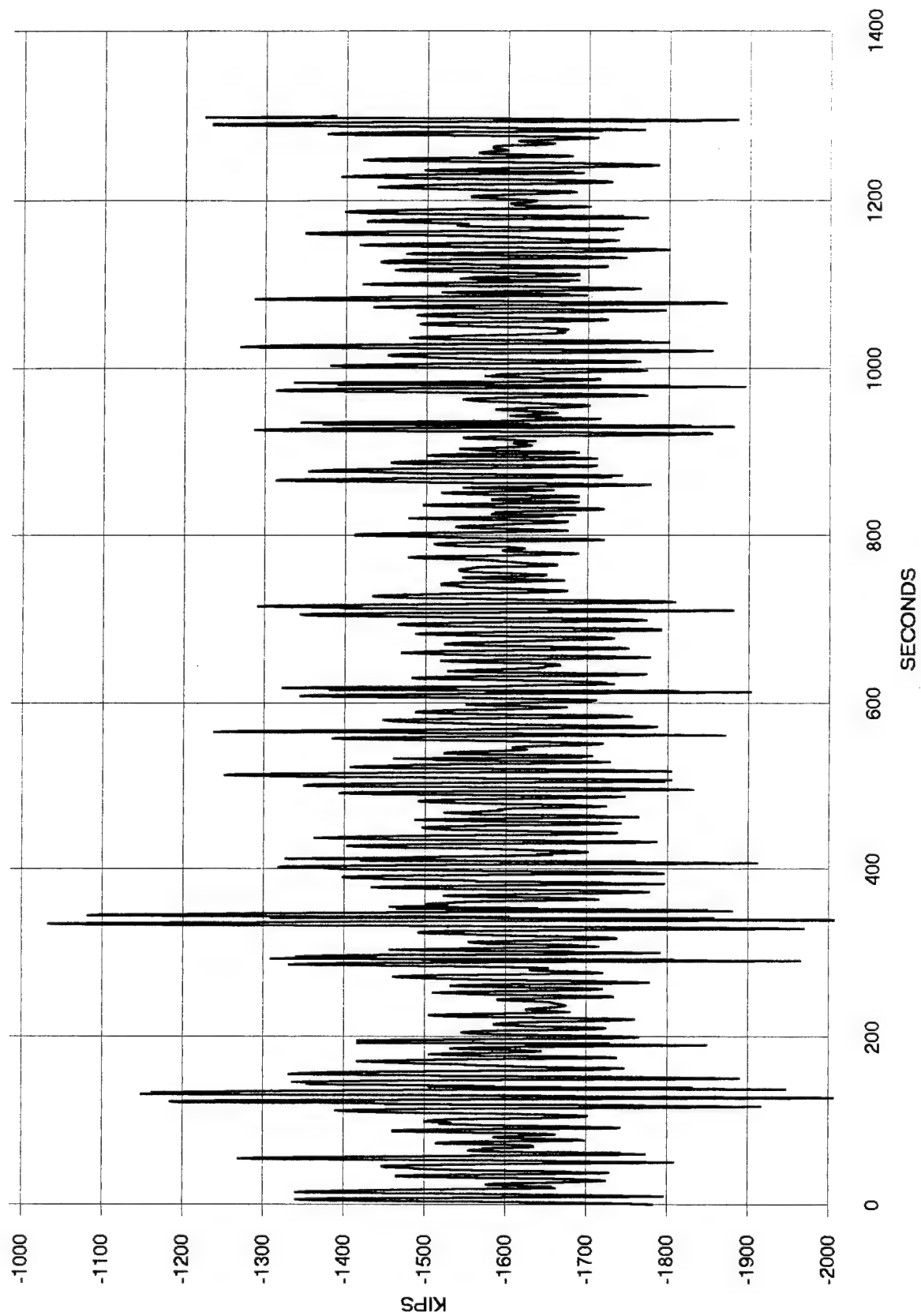
A539 - BT-1 THP (DRY)



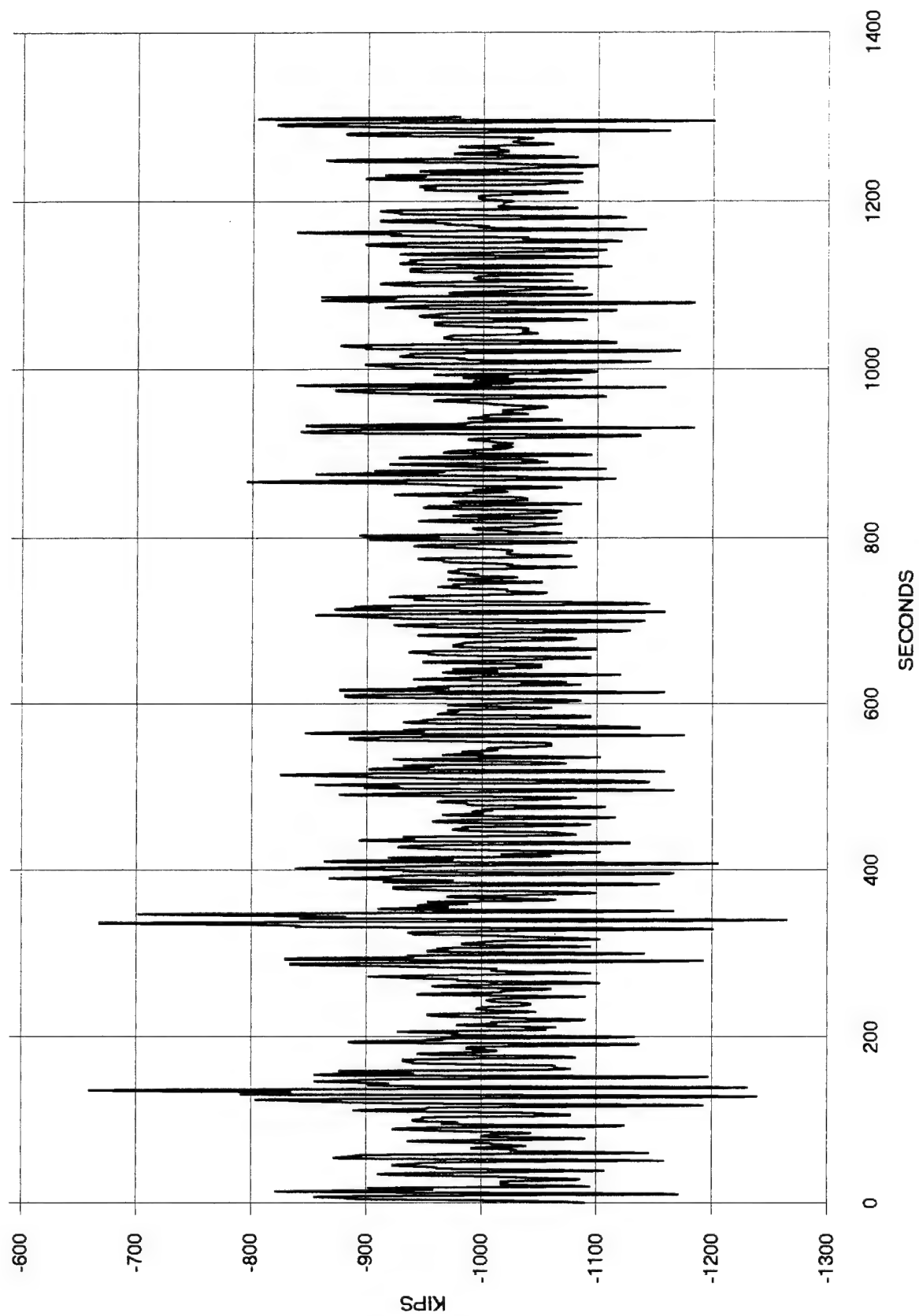
A539 - BT-3 THP (INV. CONE)



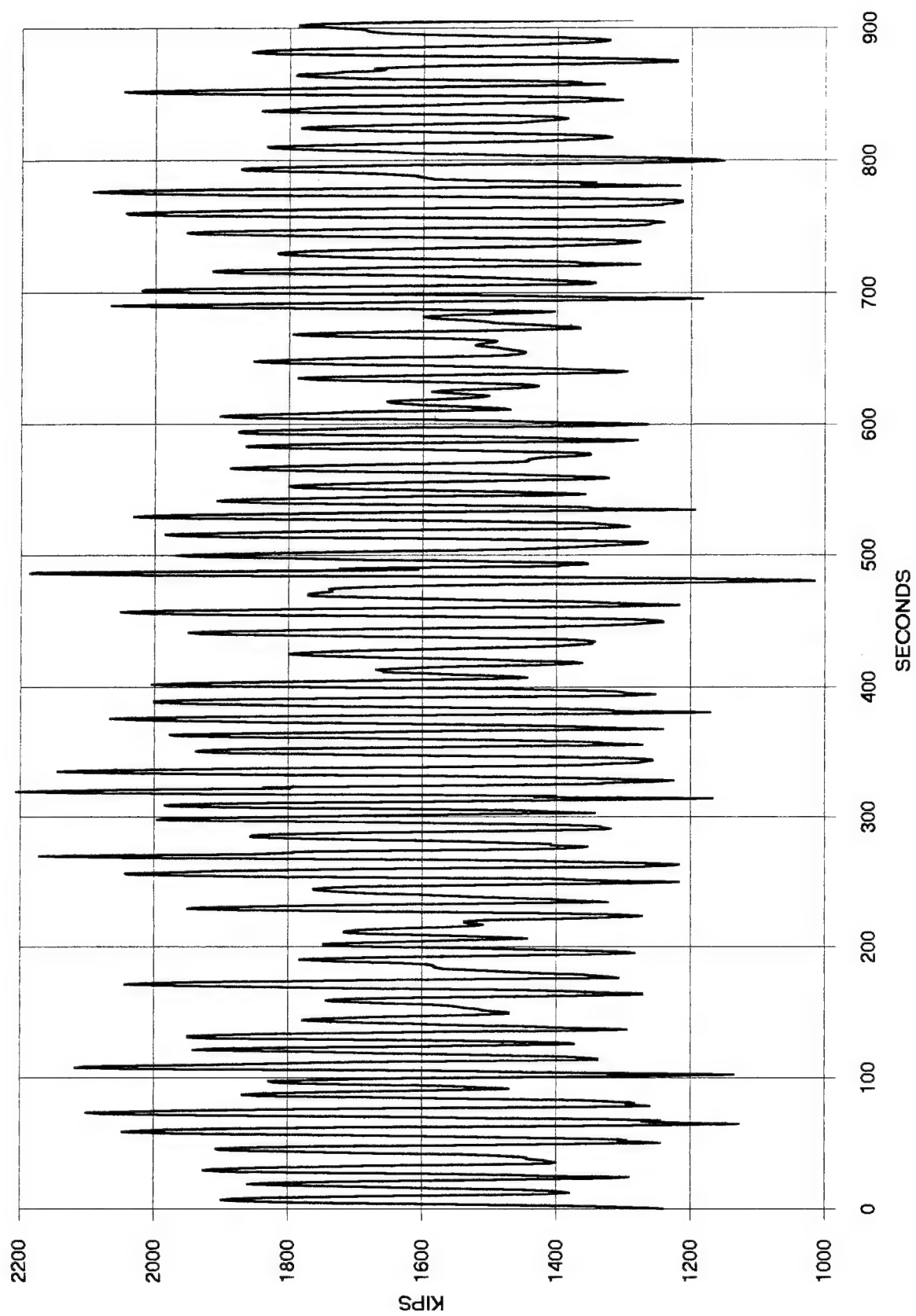
A539 - BT-5 THP (LINK BUOY)



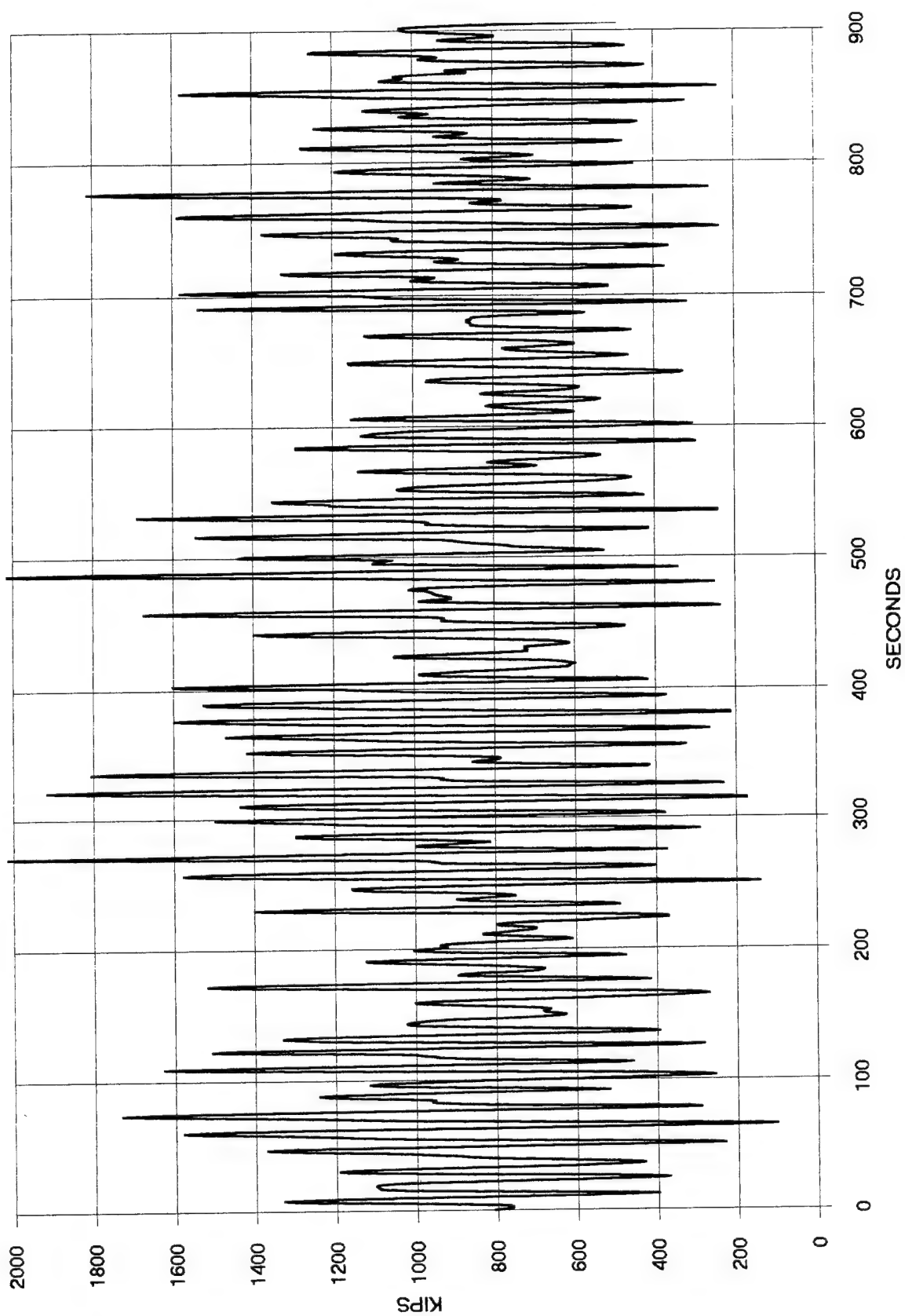
A539 - BT-6 THP (CONST. TENSION)



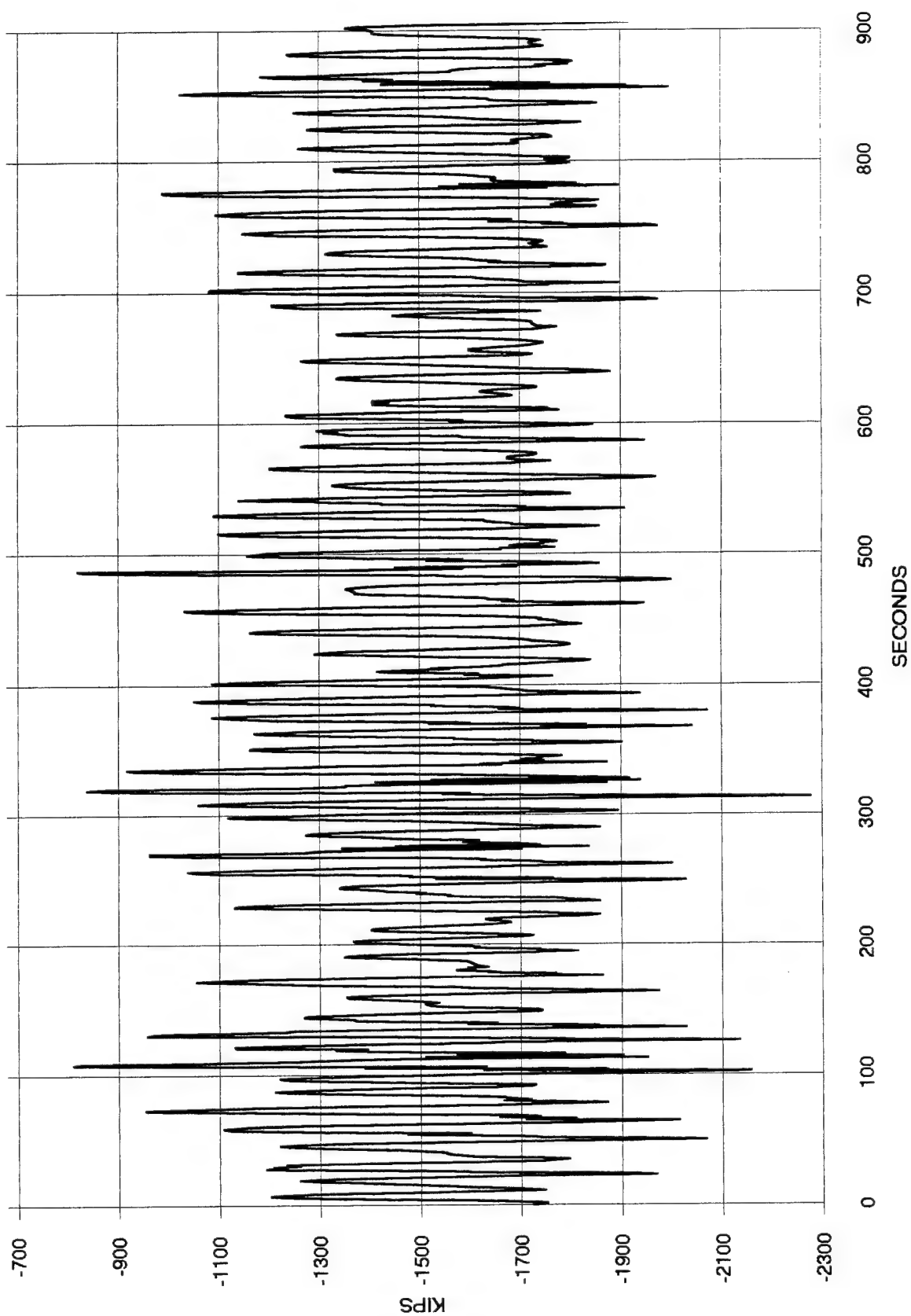
A540 - BT-1 THP (DRY)



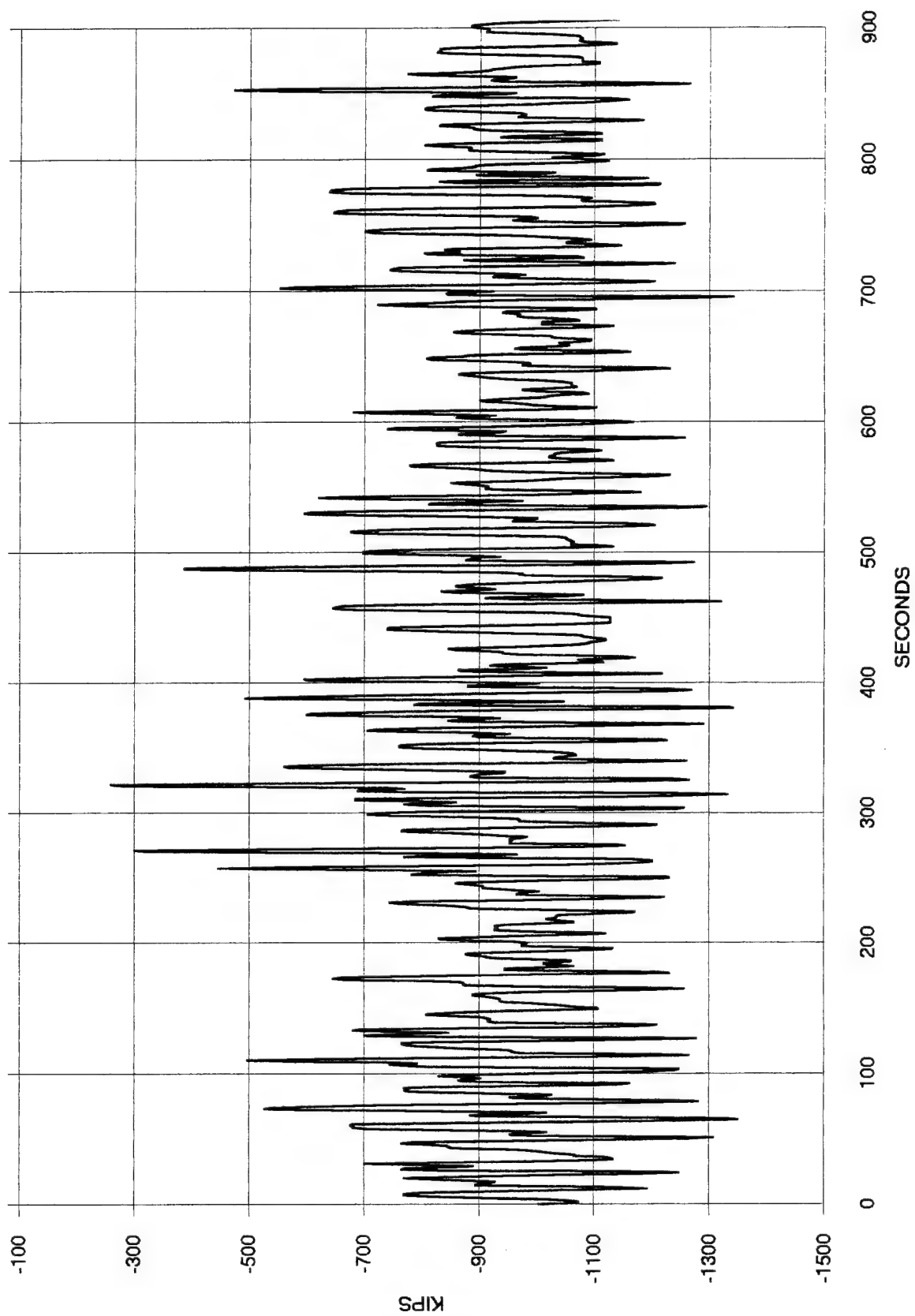
A540 - BT-3 THP (INV. CONE)



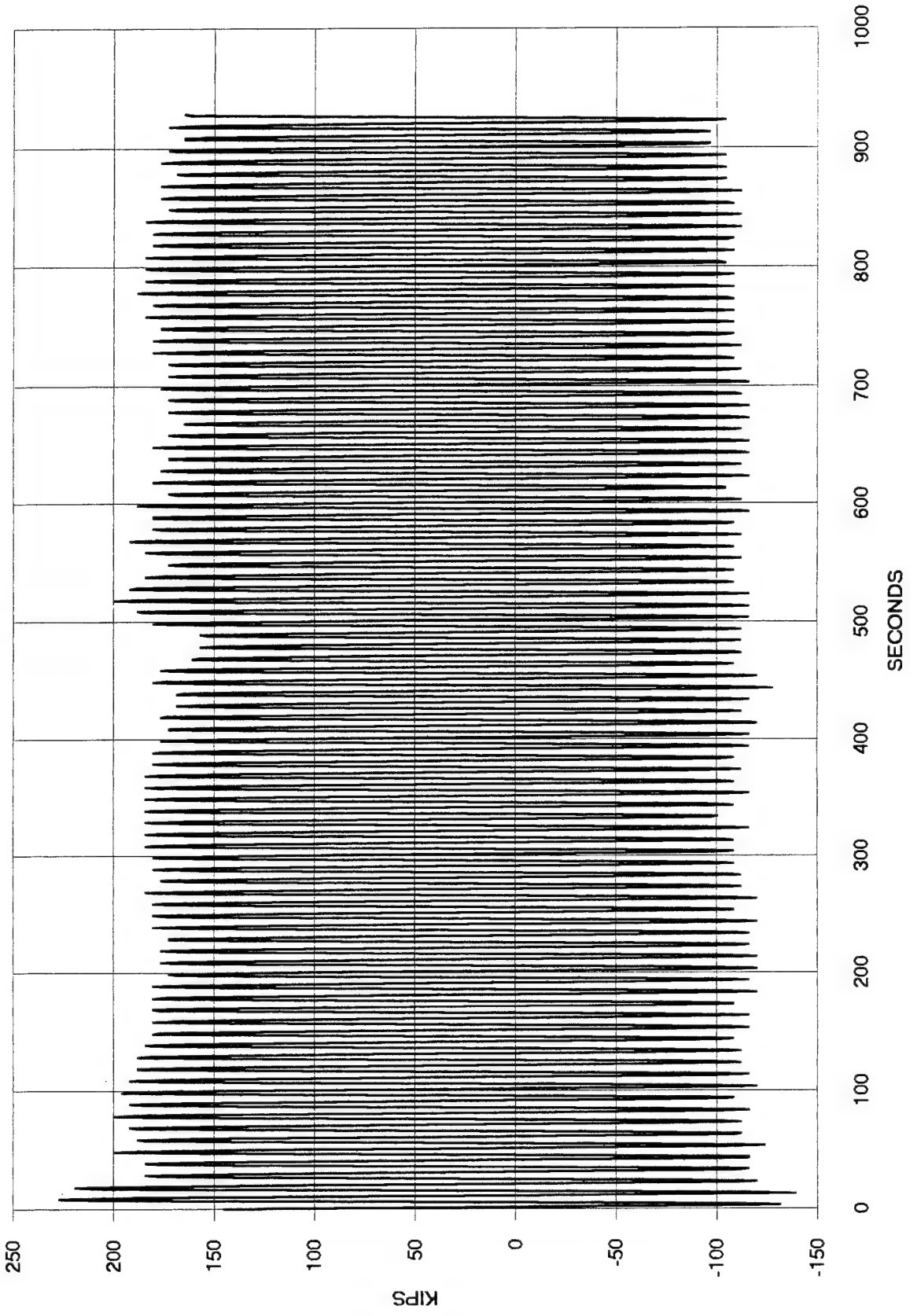
A540 - BT-5 THP (LINK BUOY)



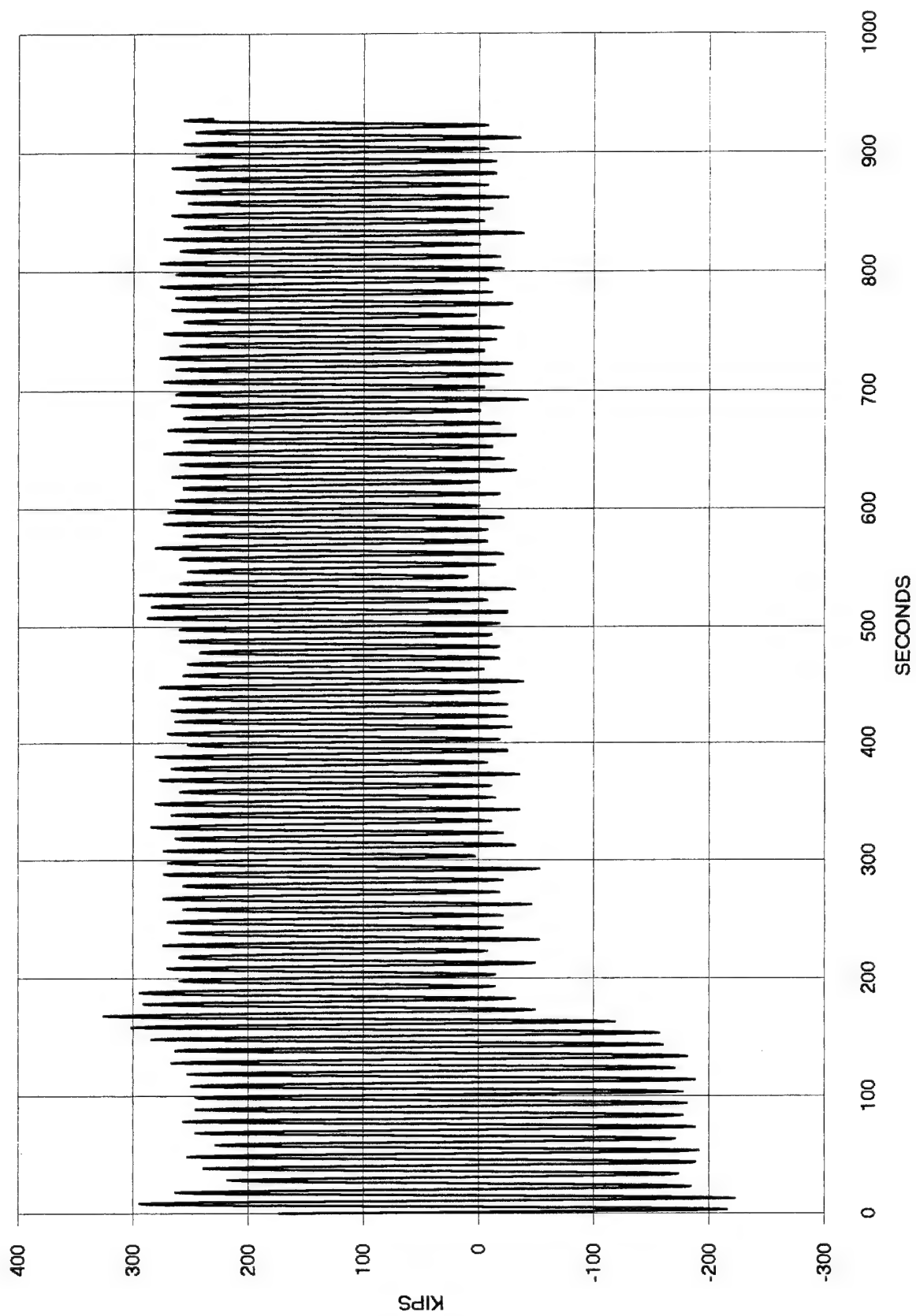
A540 - BT-6 THP (CONST. TENSION)



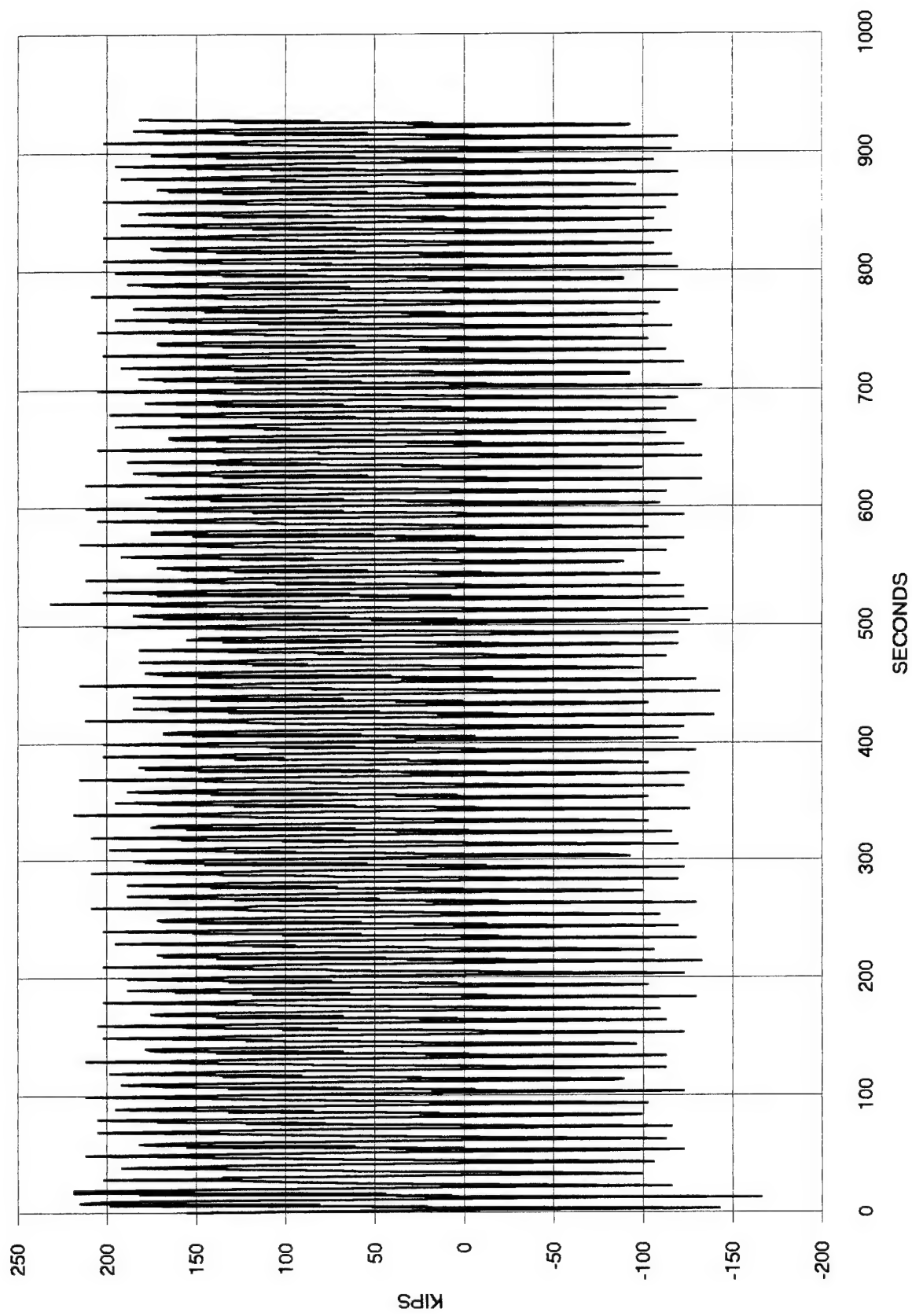
A541 - BT-1 THP (DRY)



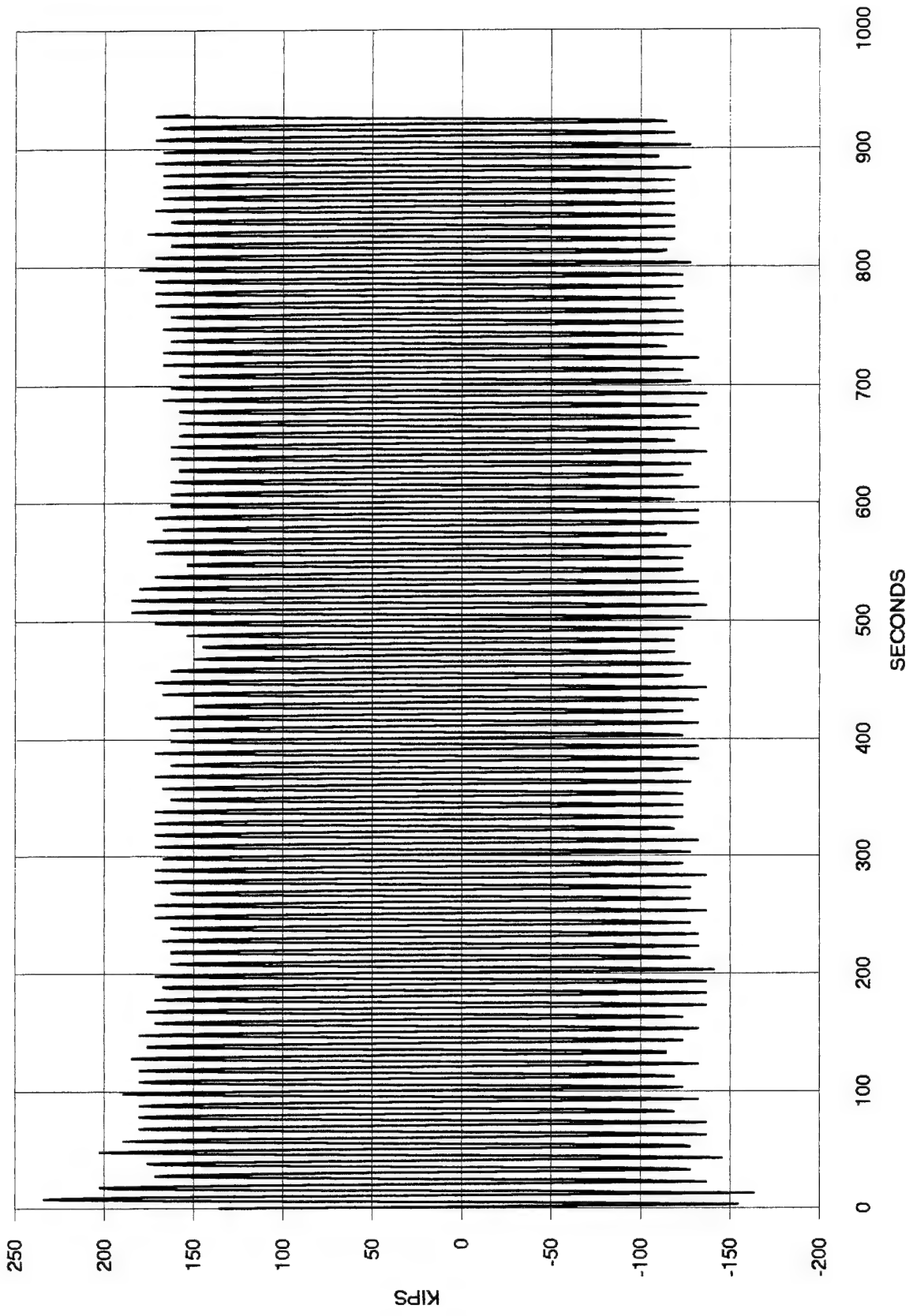
A541 - BT-3 THP (INV. CONE)



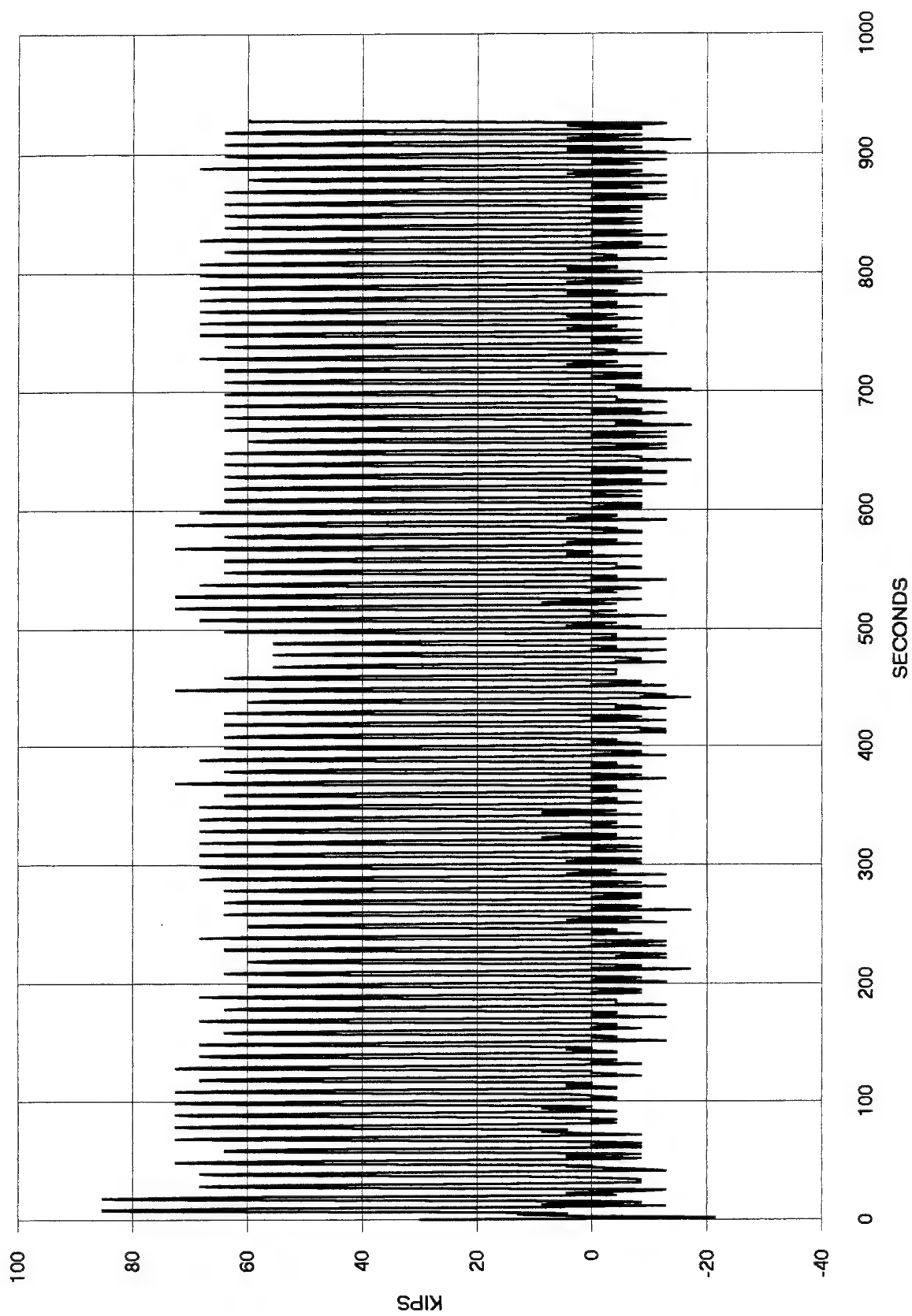
A541 - BT-4 THP (SEGMENTED)



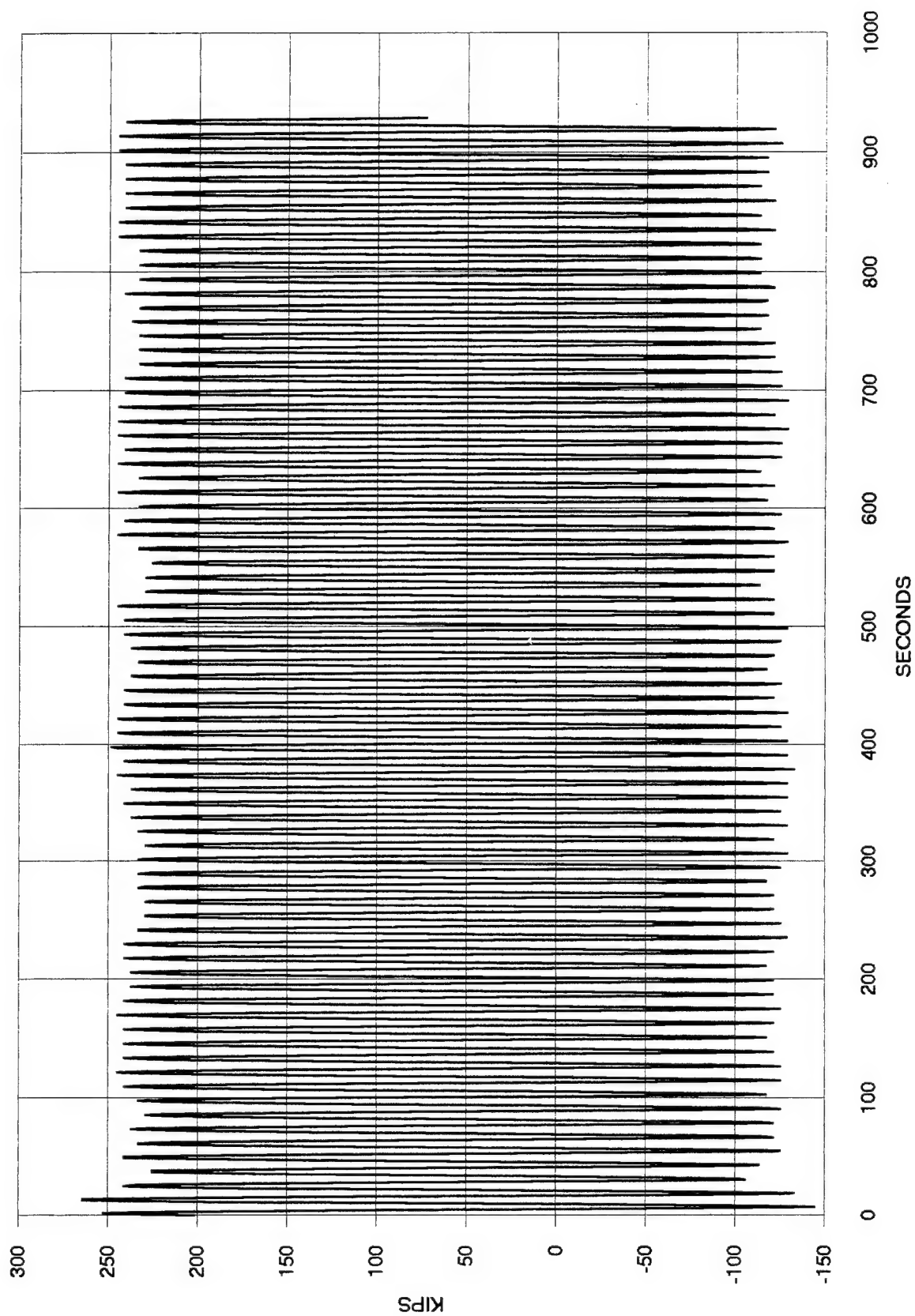
A541 - BT-5 THP (LINK BUOY)



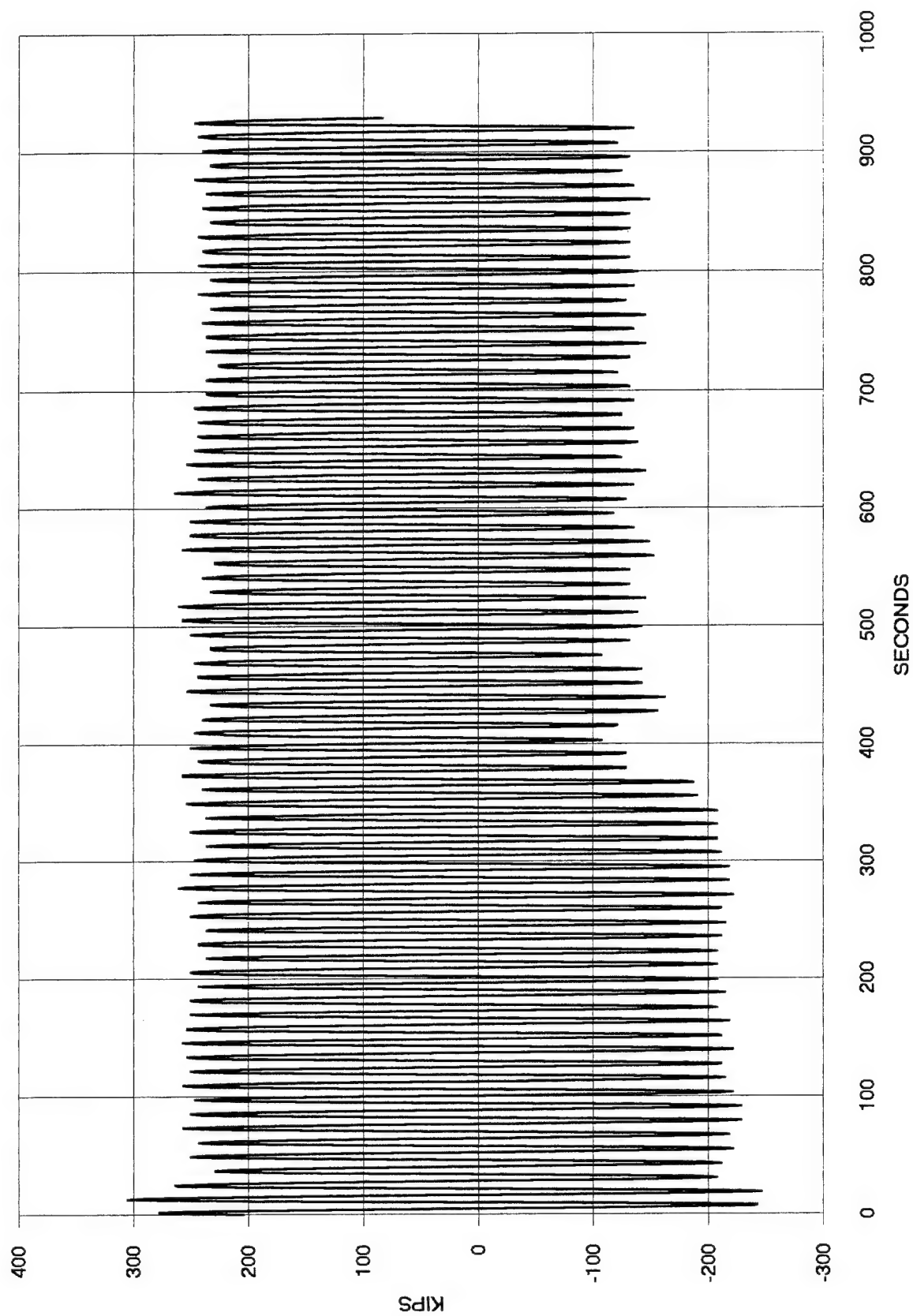
A541 - BT-6 THP (HOUR GLASS)



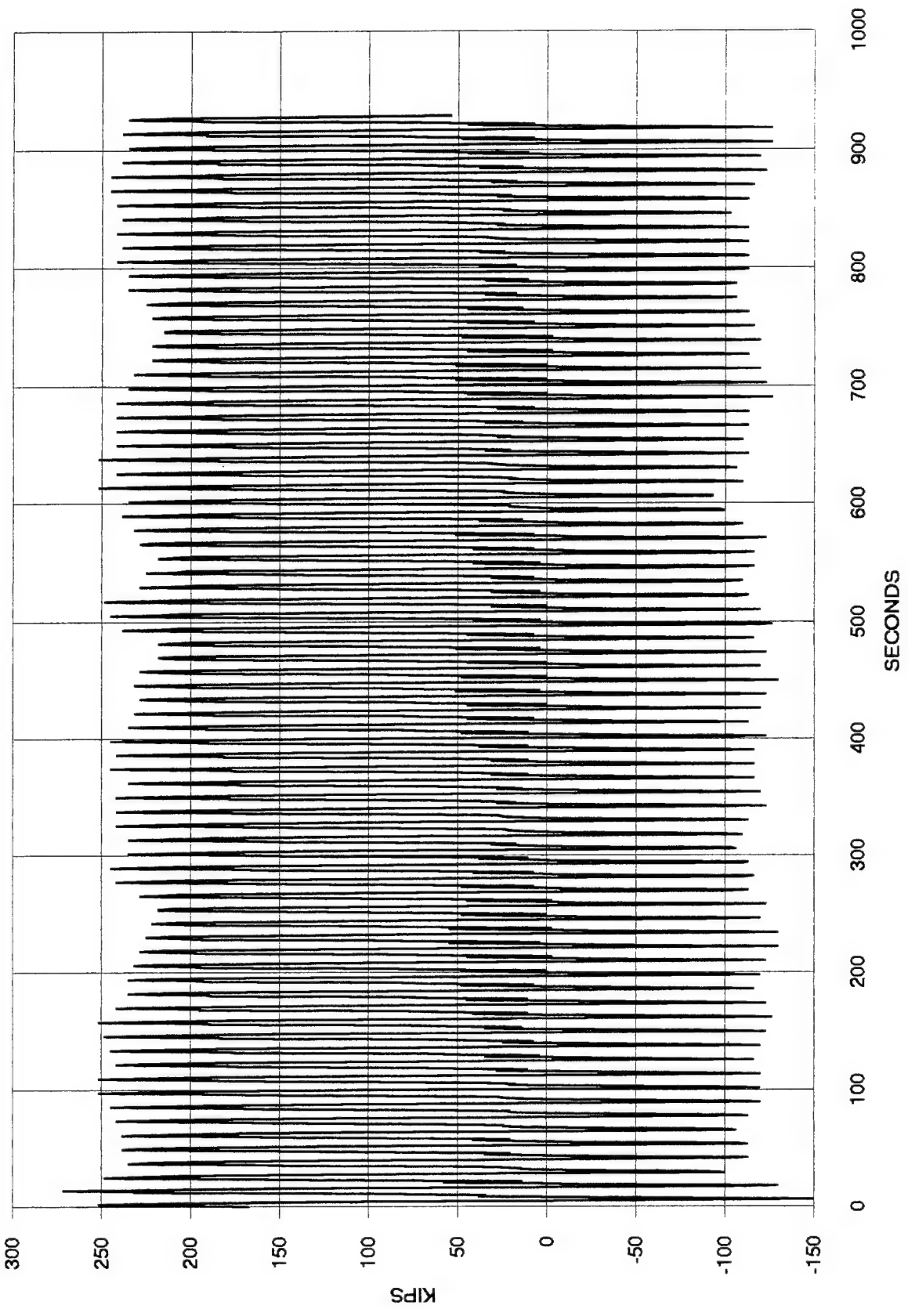
A542 - BT-1 THP (DRY)



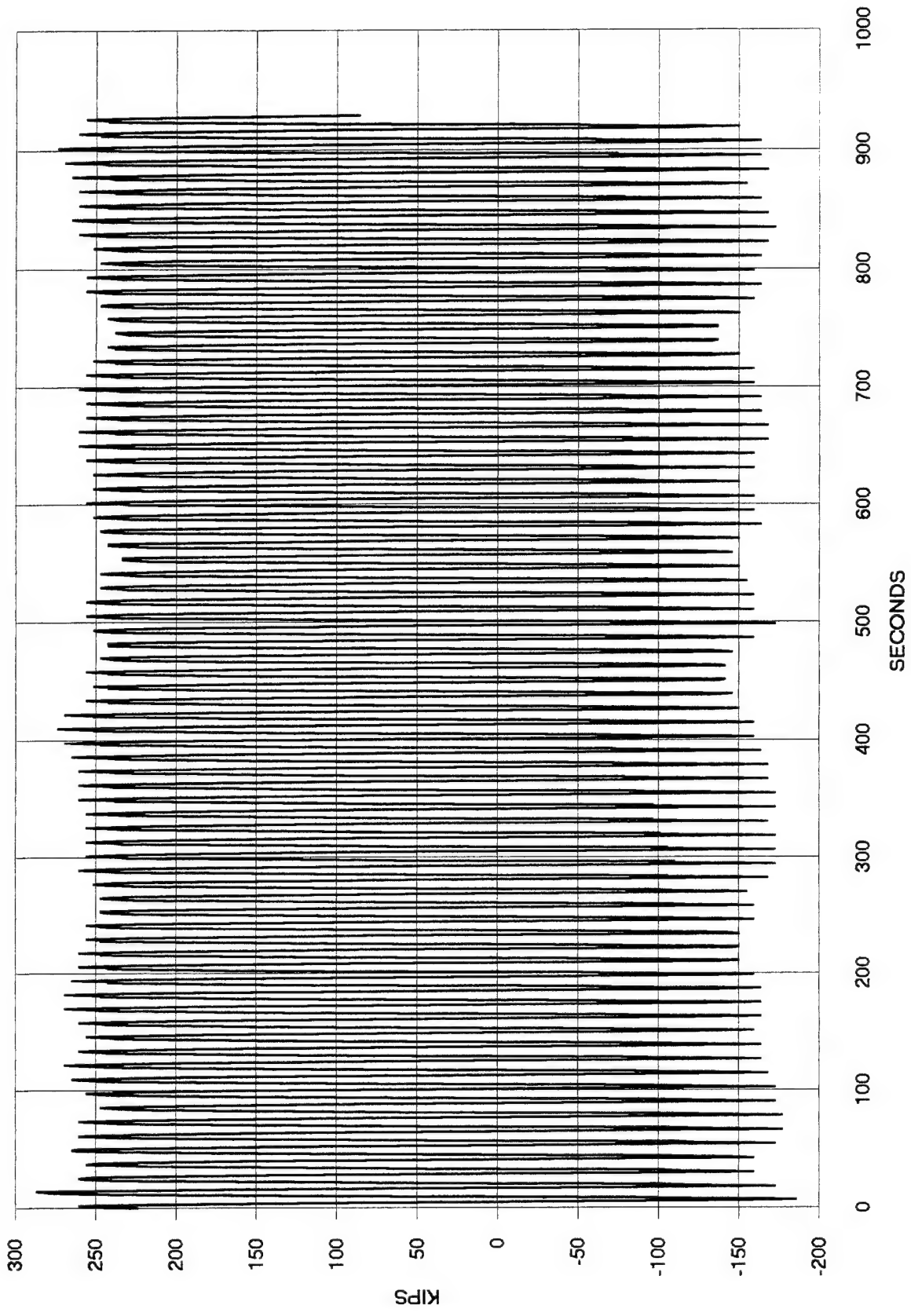
A542 - BT-3 THP (INV. CONE)



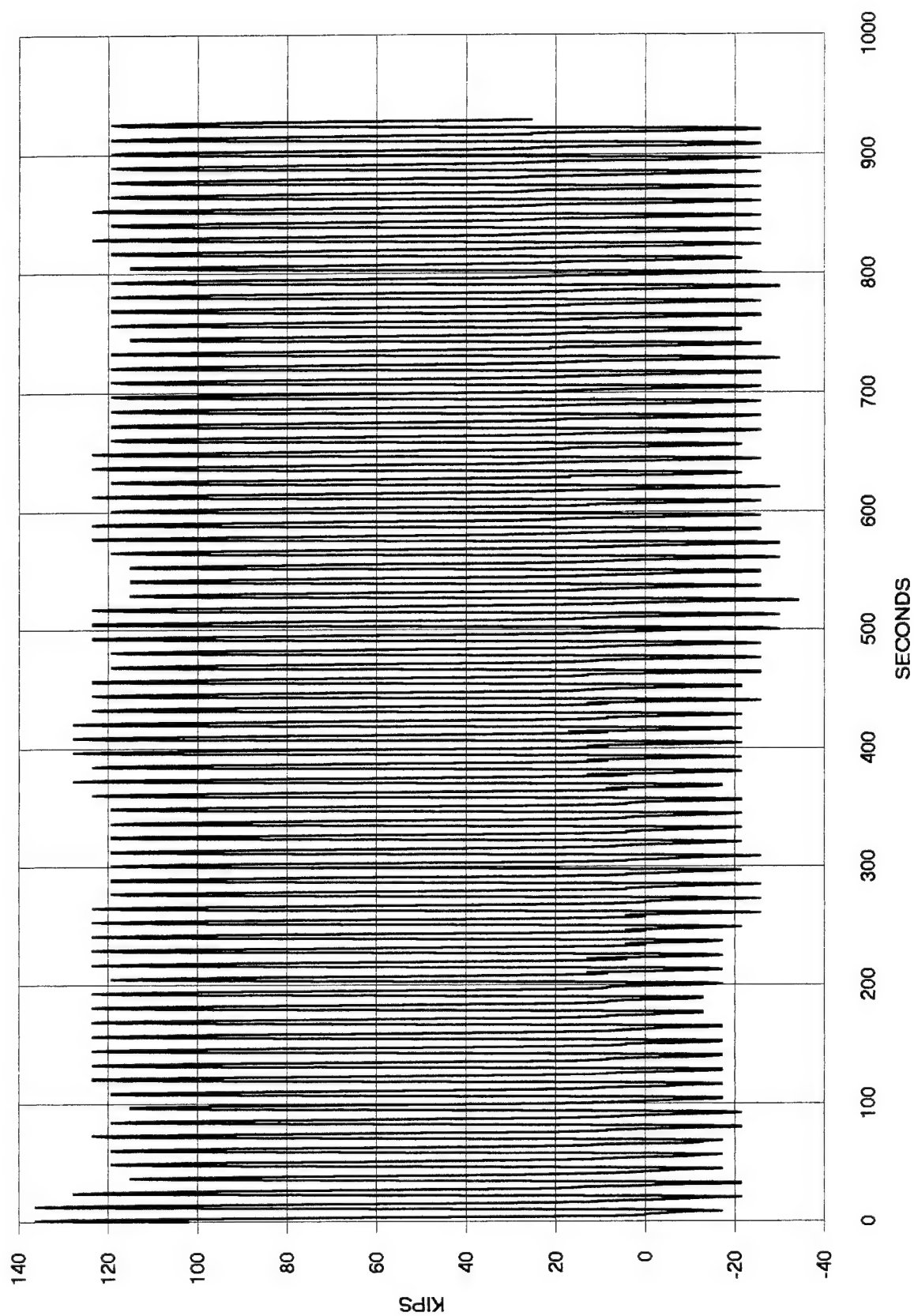
A542 - BT-4 THP (SEGMENTED)



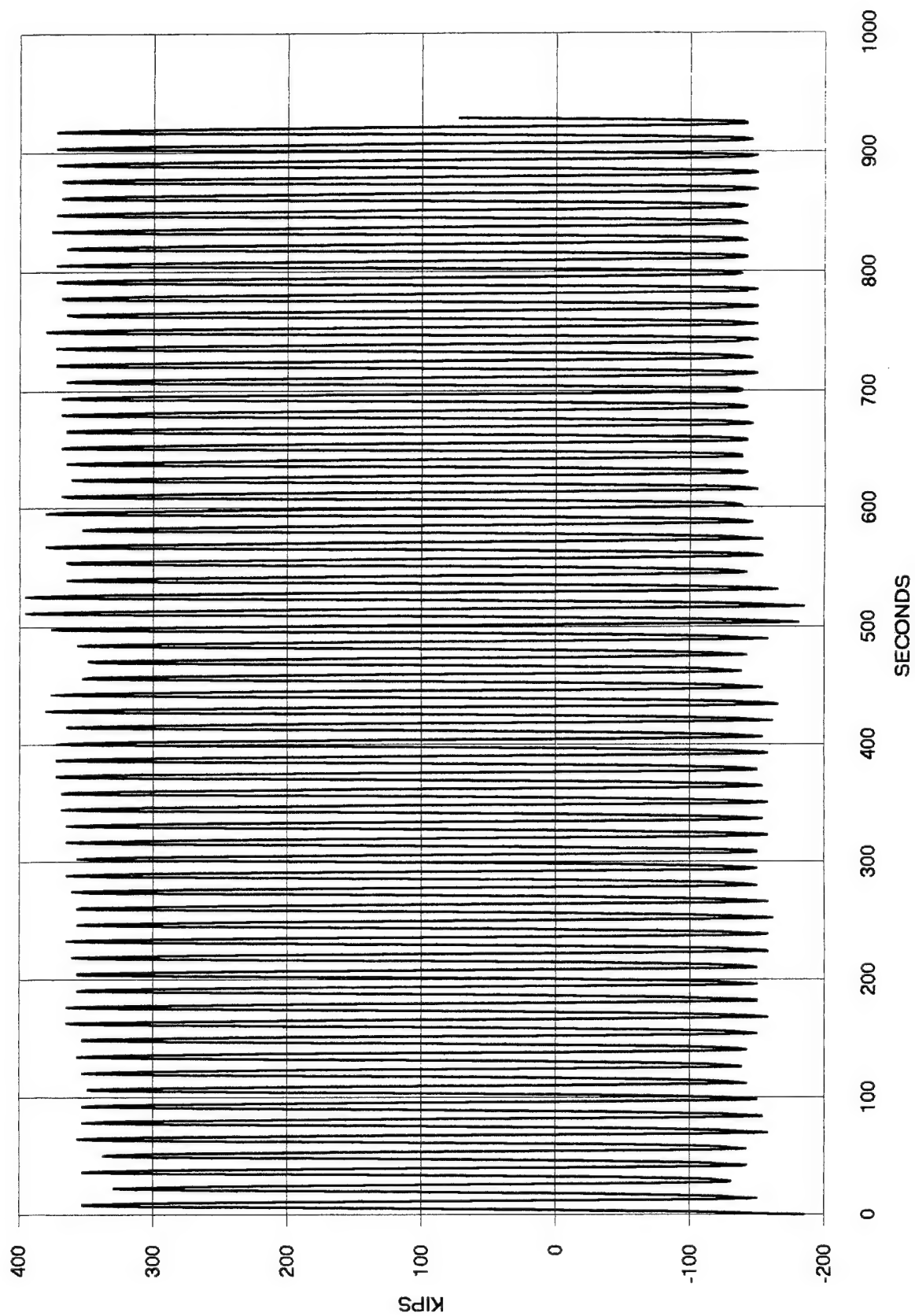
A542 - BT-5 THP (LINK BUOY)



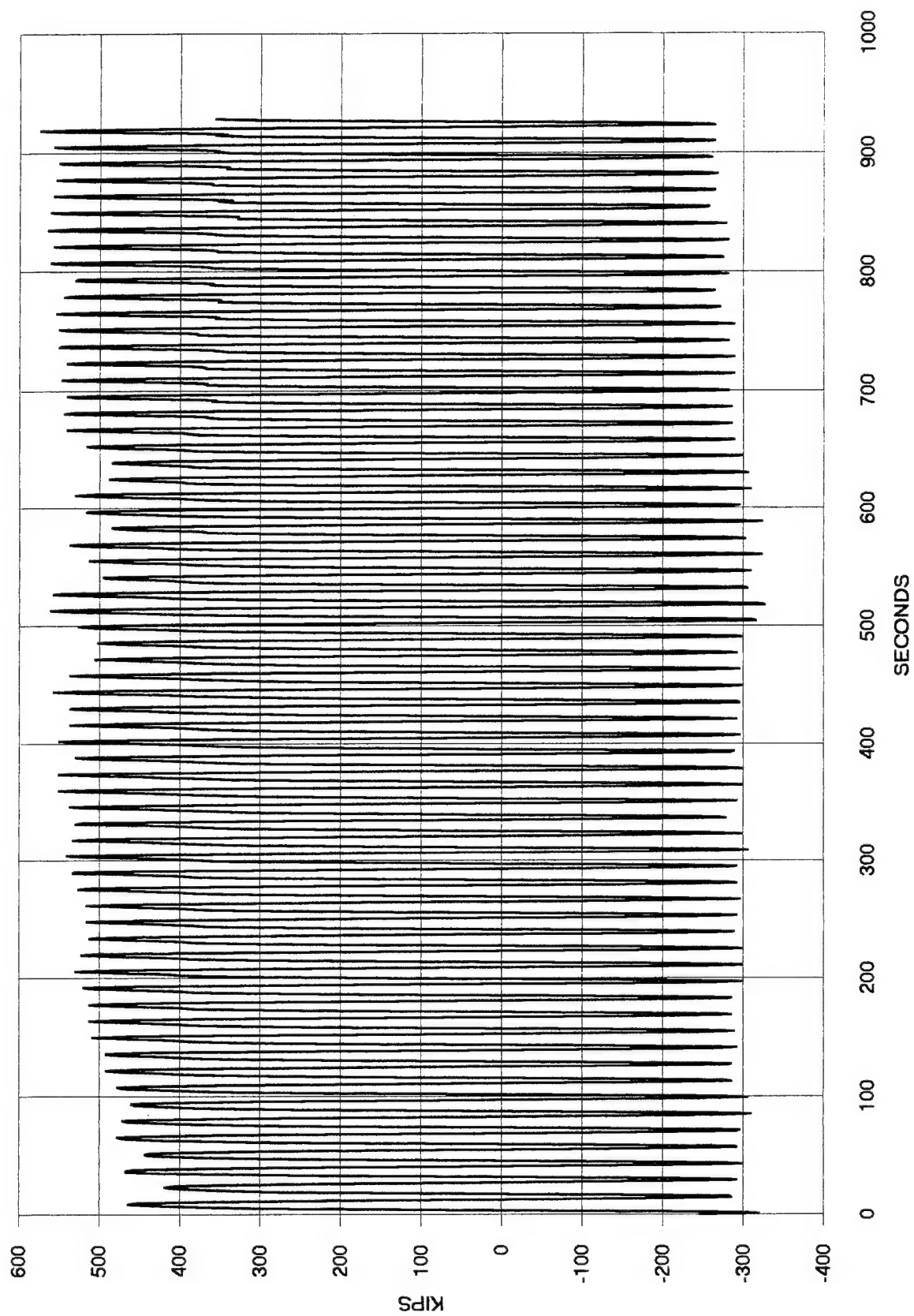
A542 - BT-6 THP (HOUR GLASS)



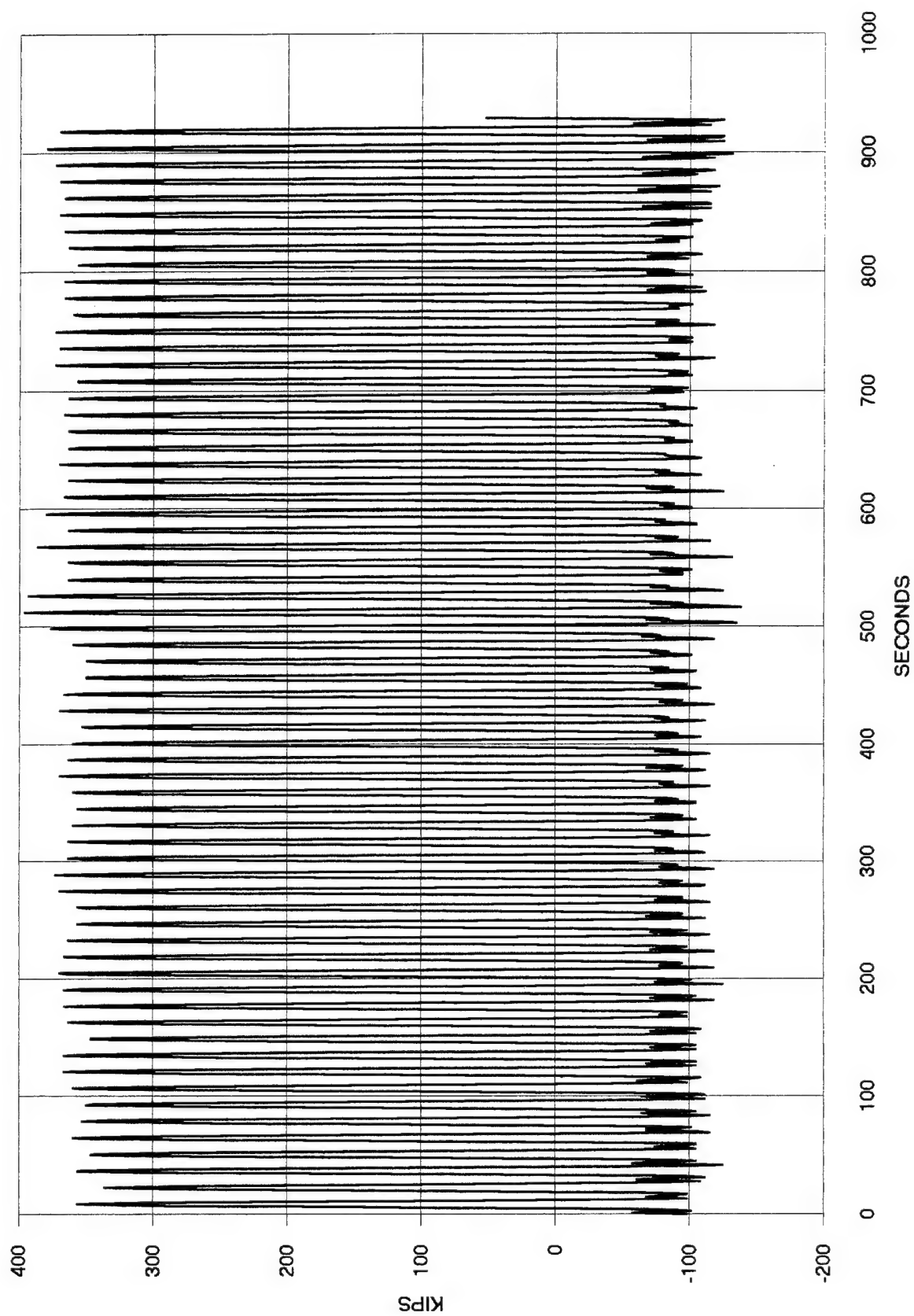
A543 - BT-1 THP (DRY)



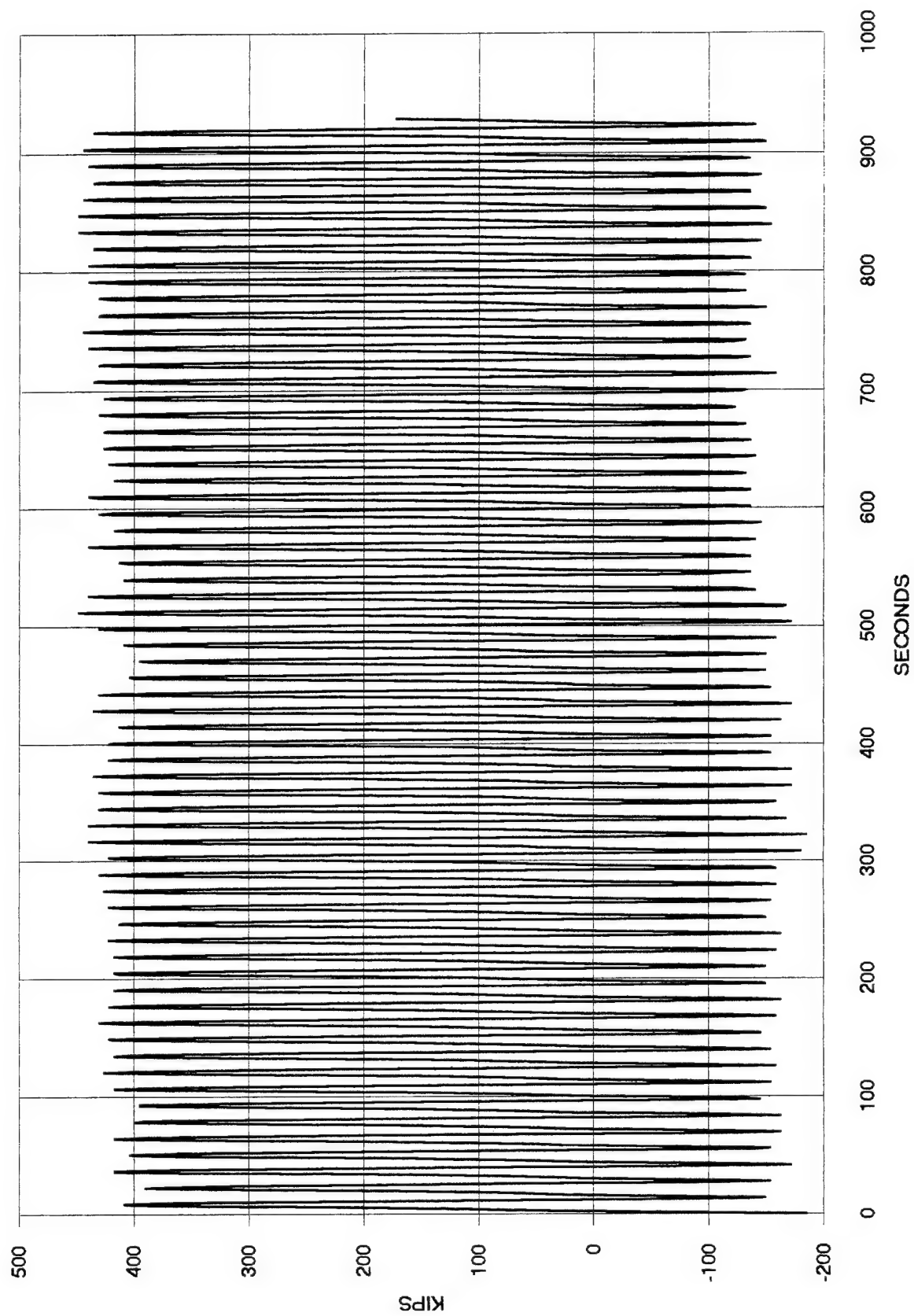
A543 - BT-3 THP (INV. CONE)



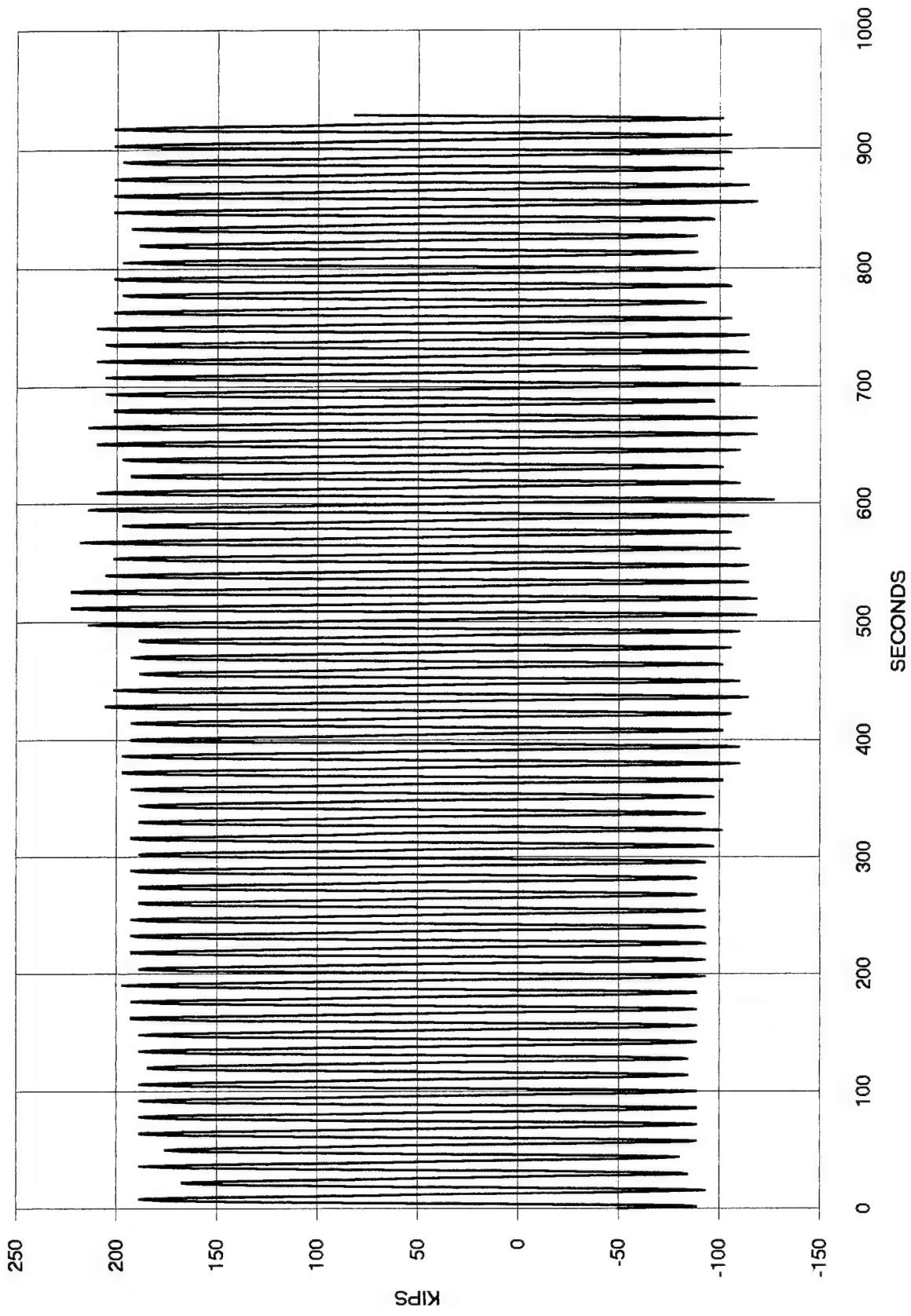
A543 - BT-4 THP (SEGMENTED)



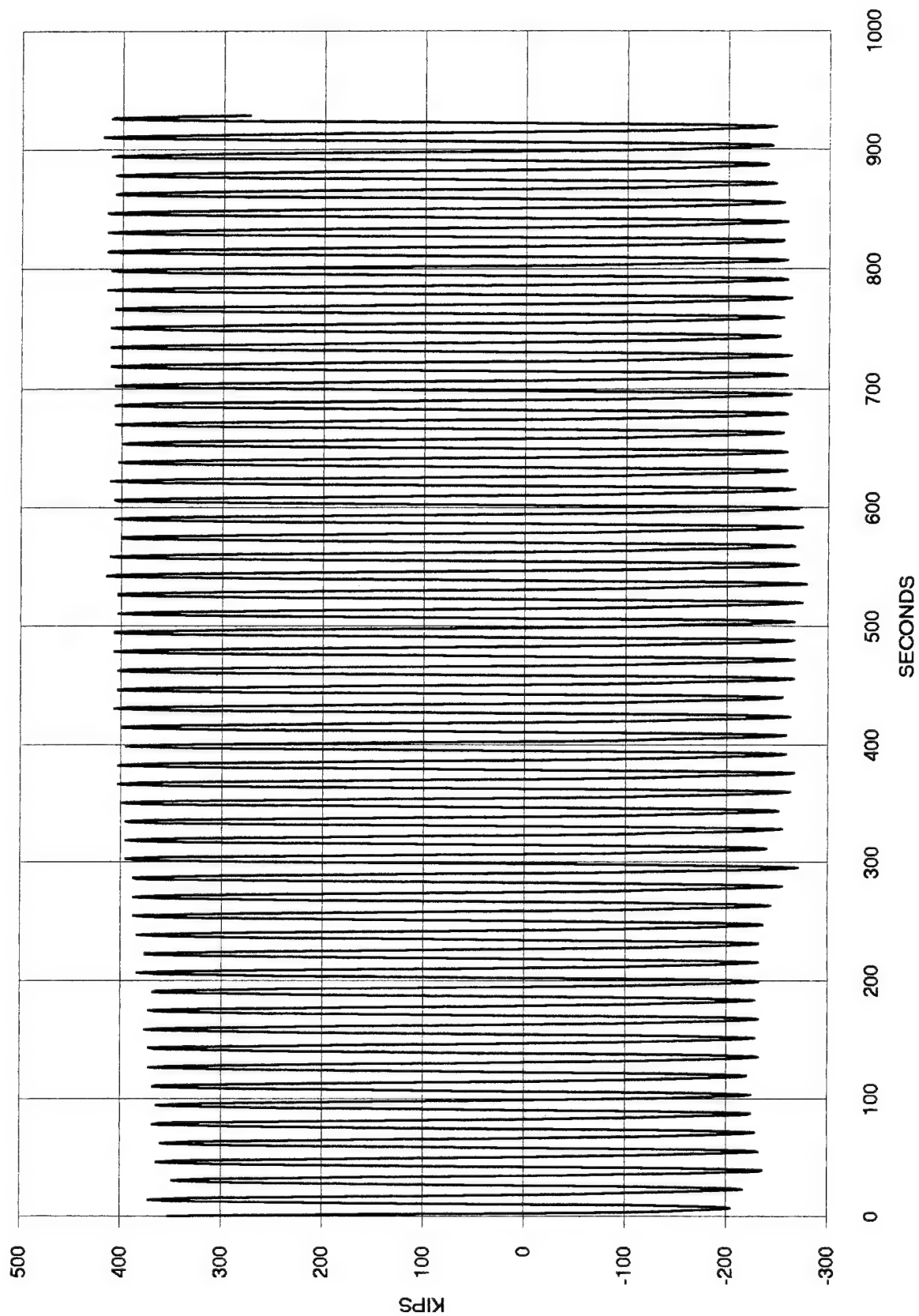
A543 - BT-5 THP (LINK BUOY)



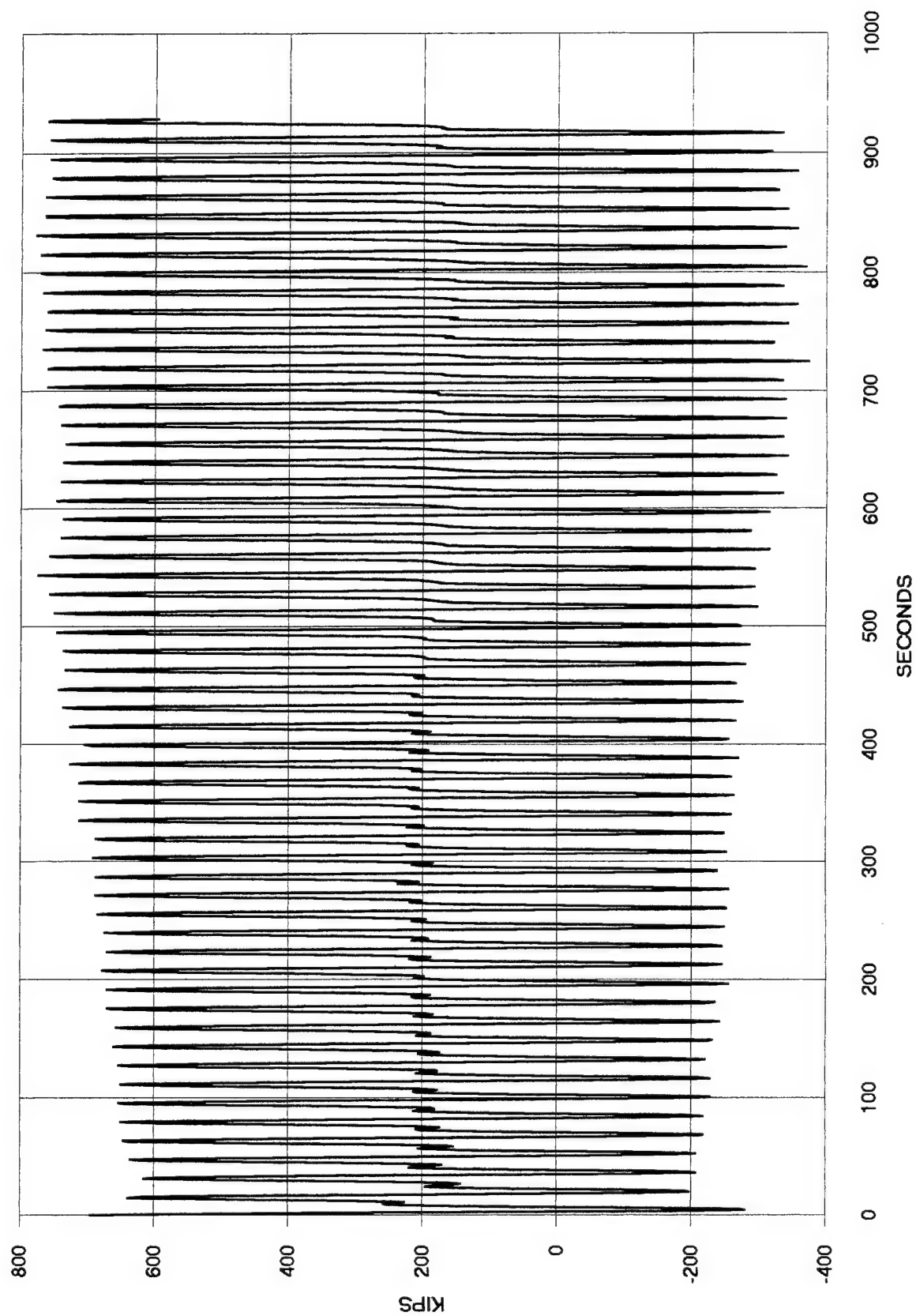
A543 - BT-6 THP (HOUR GLASS)



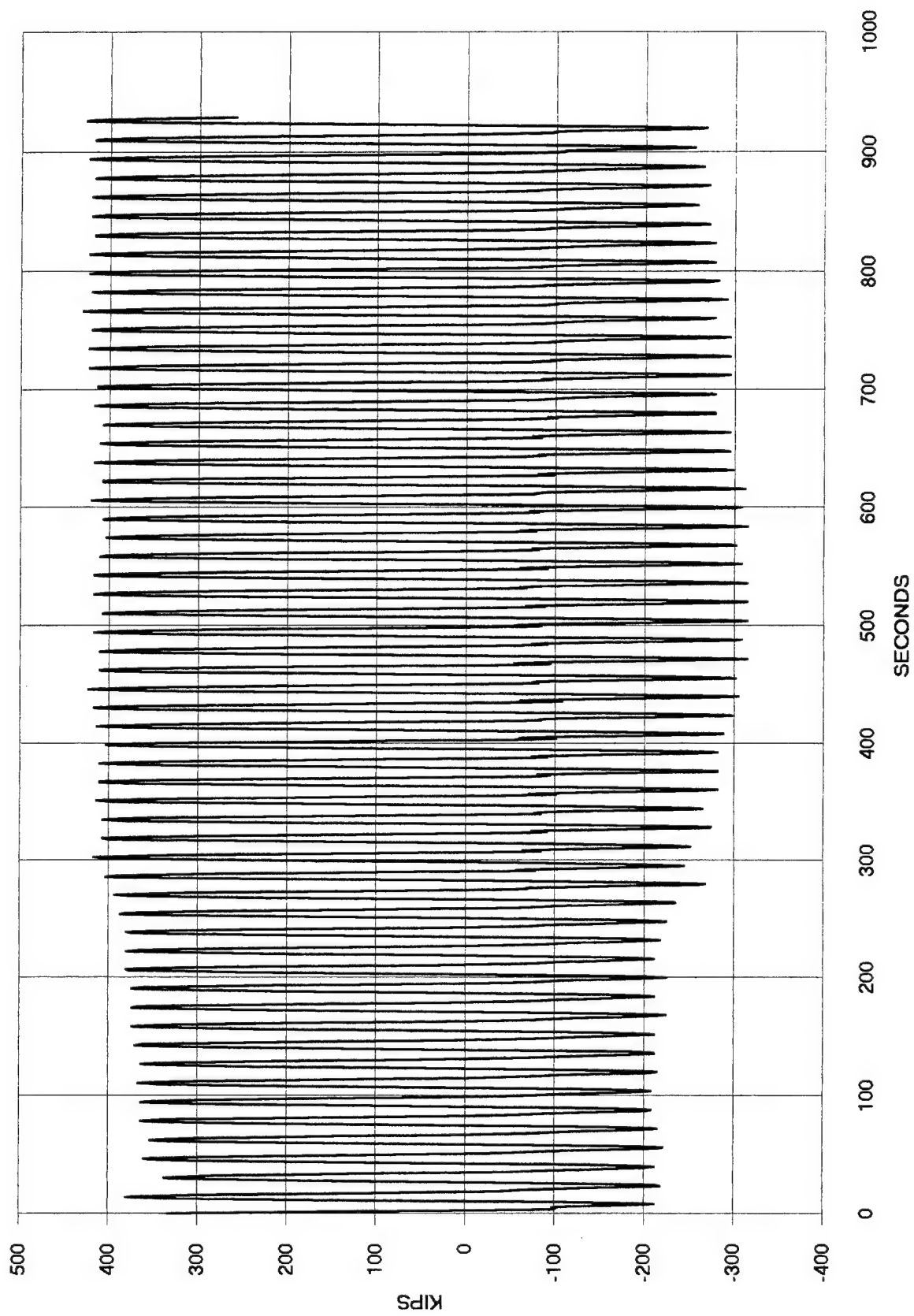
A544 - BT-1 THP (DRY)



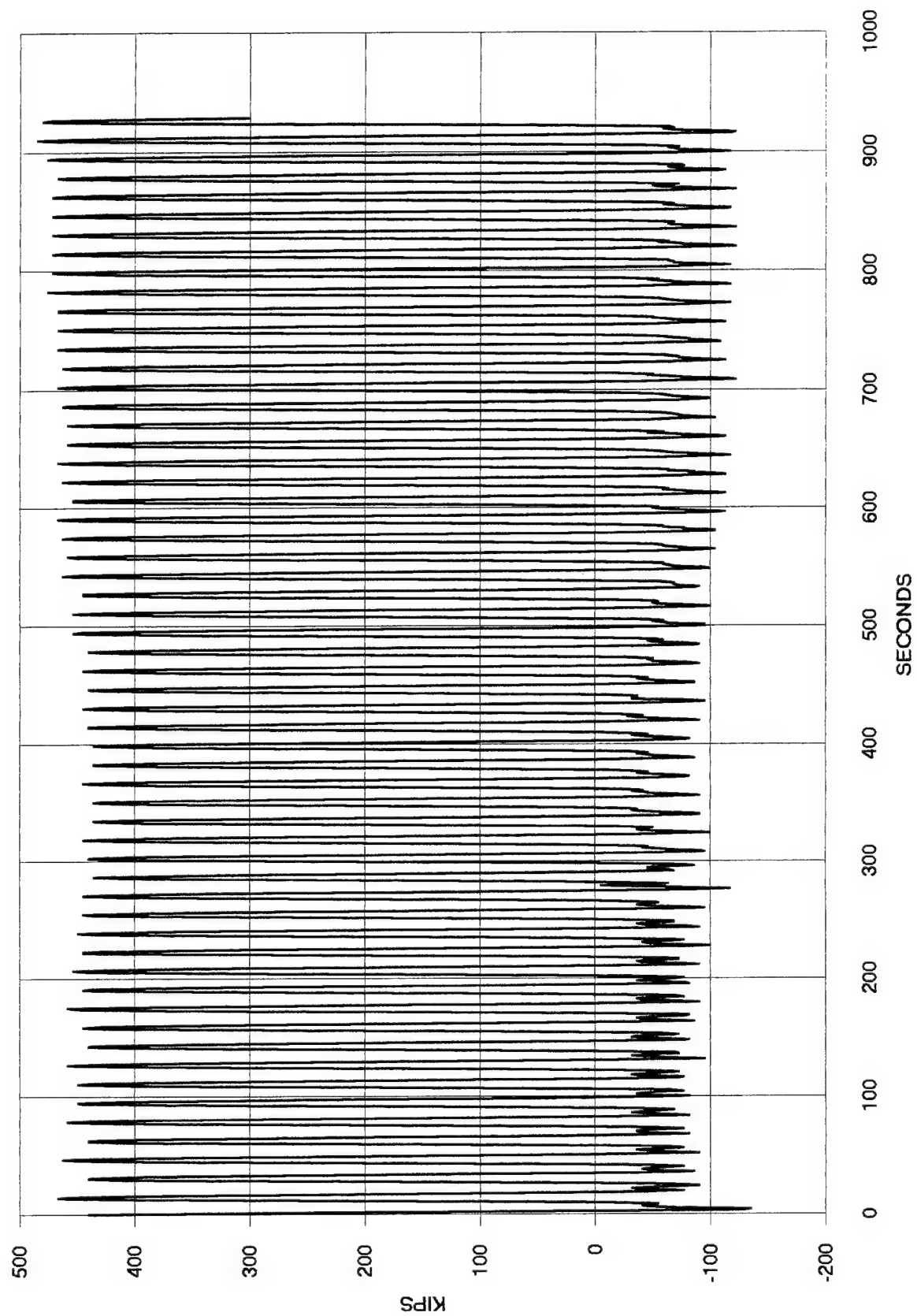
A544 - BT-3 THP (INV. CONE)



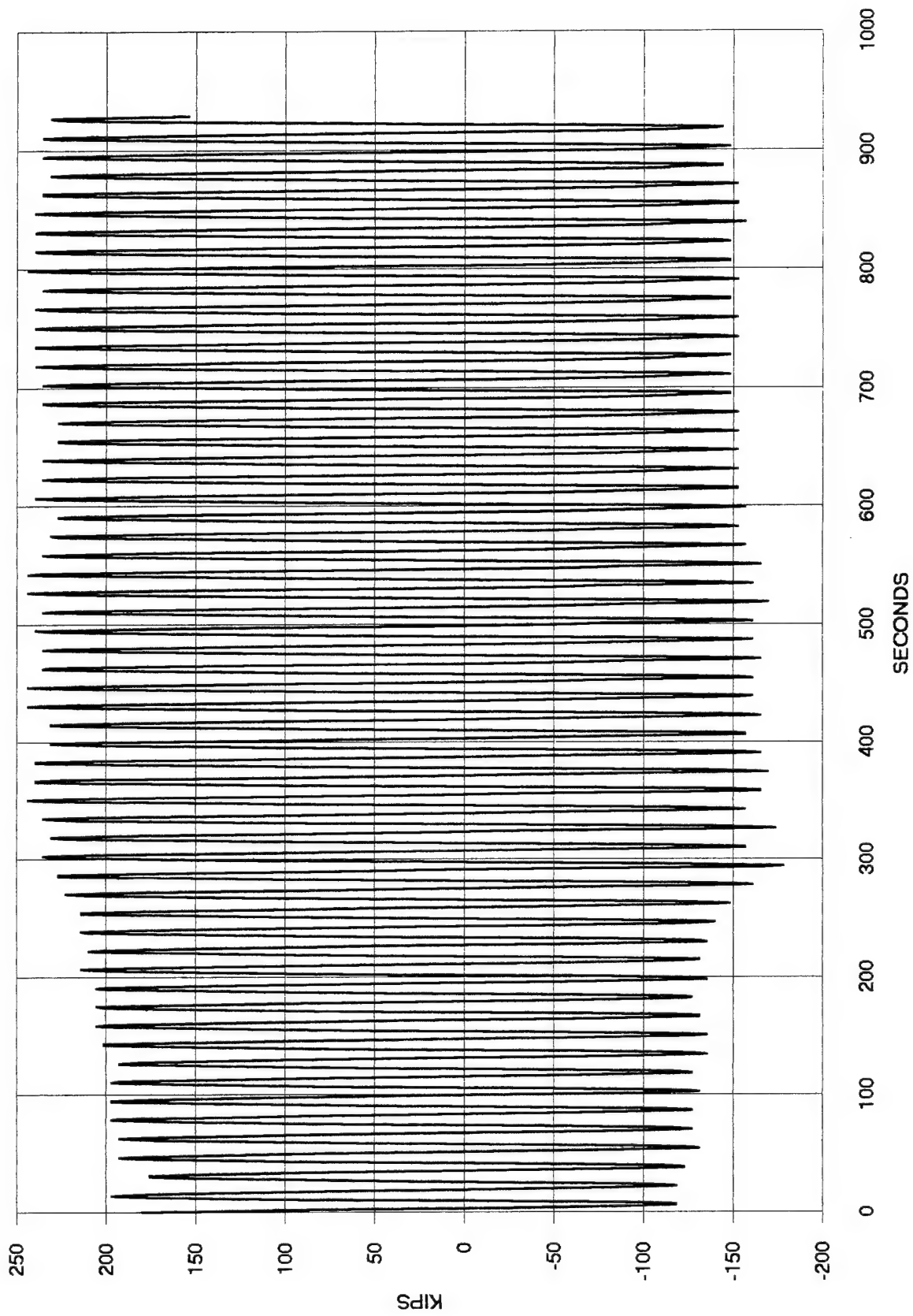
A544 - BT-4 THP (SEGMENTED)



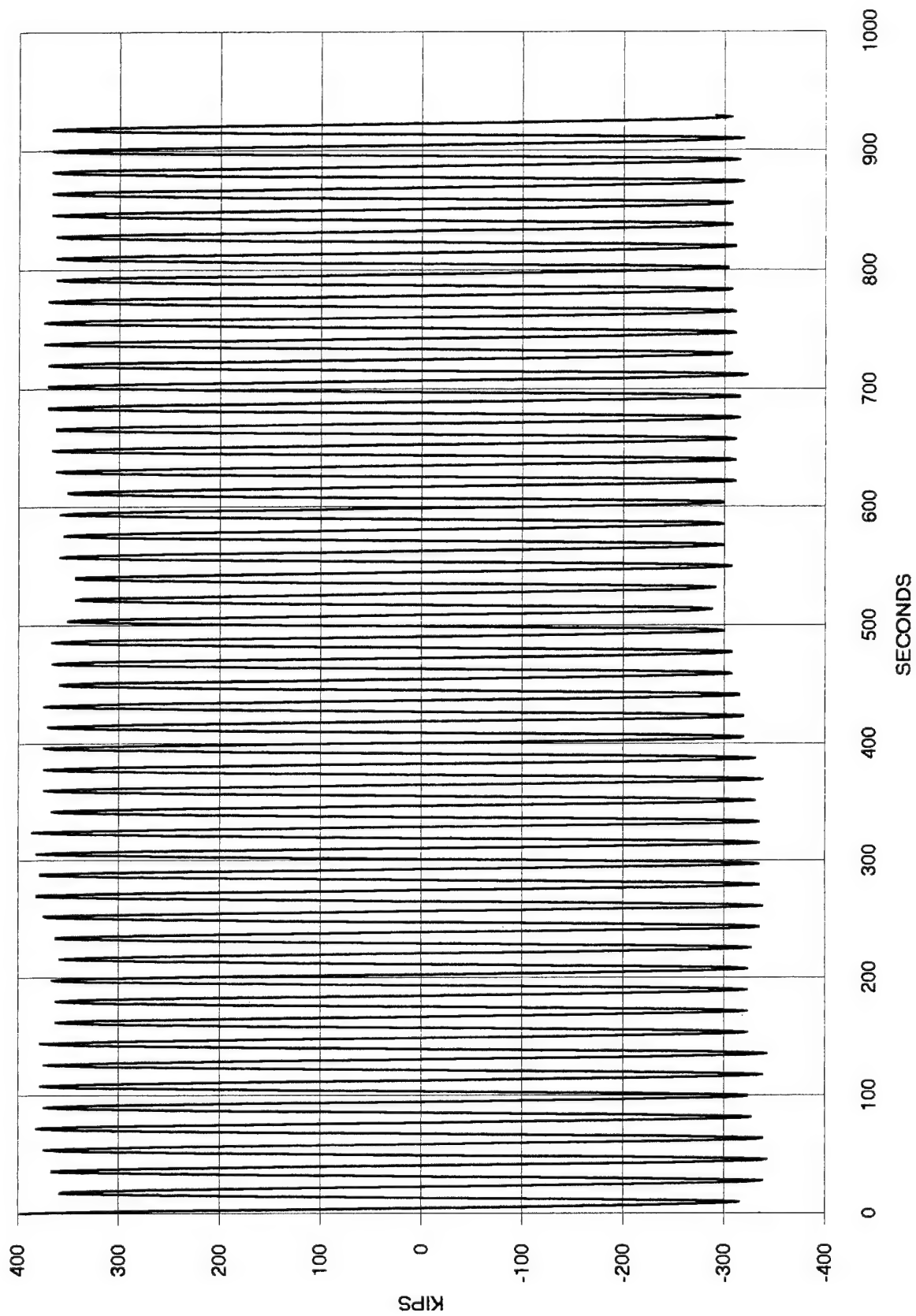
A544 - BT-5 THP (LINK BUOY)



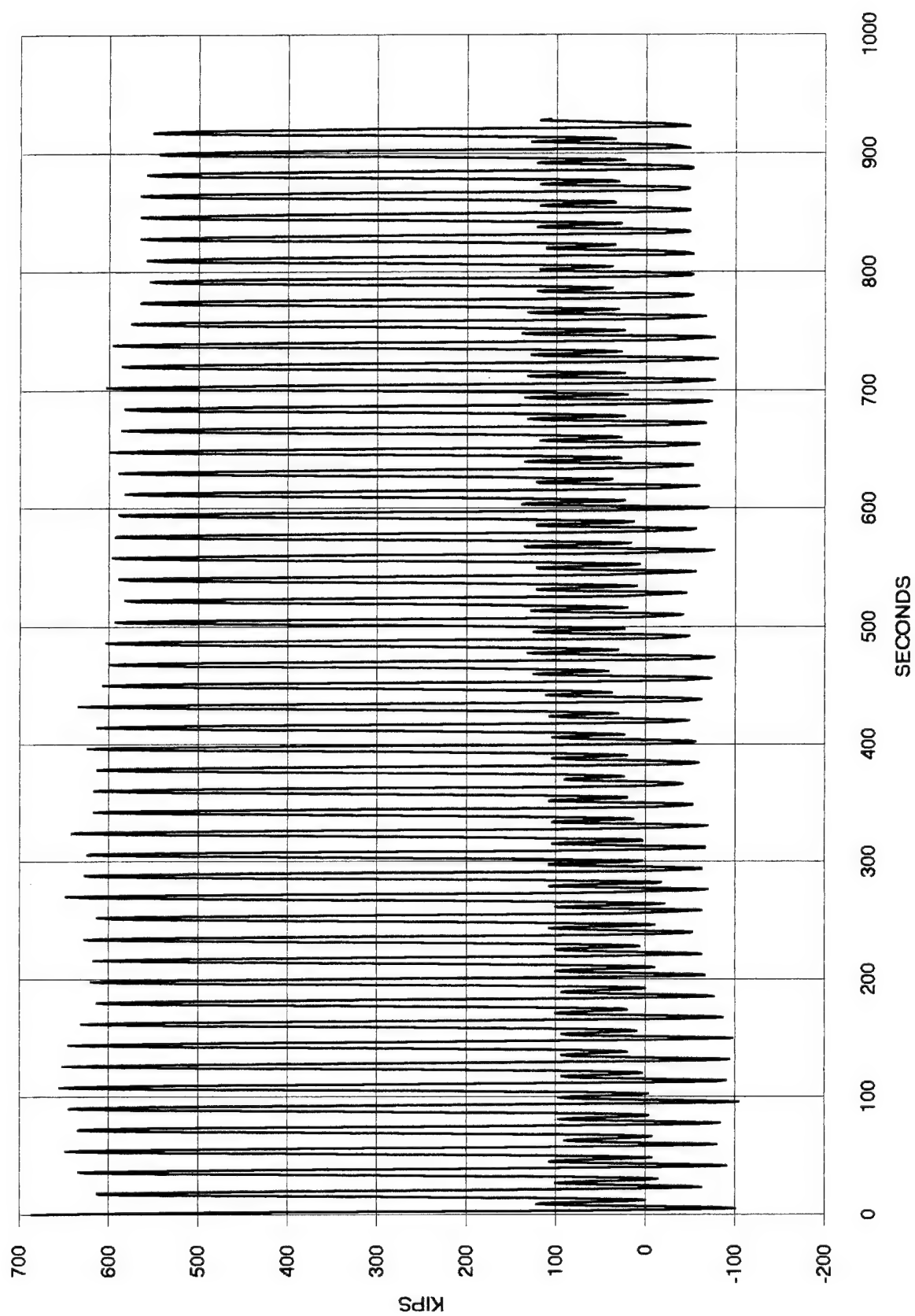
A544 - BT-6 THP (HOUR GLASS)



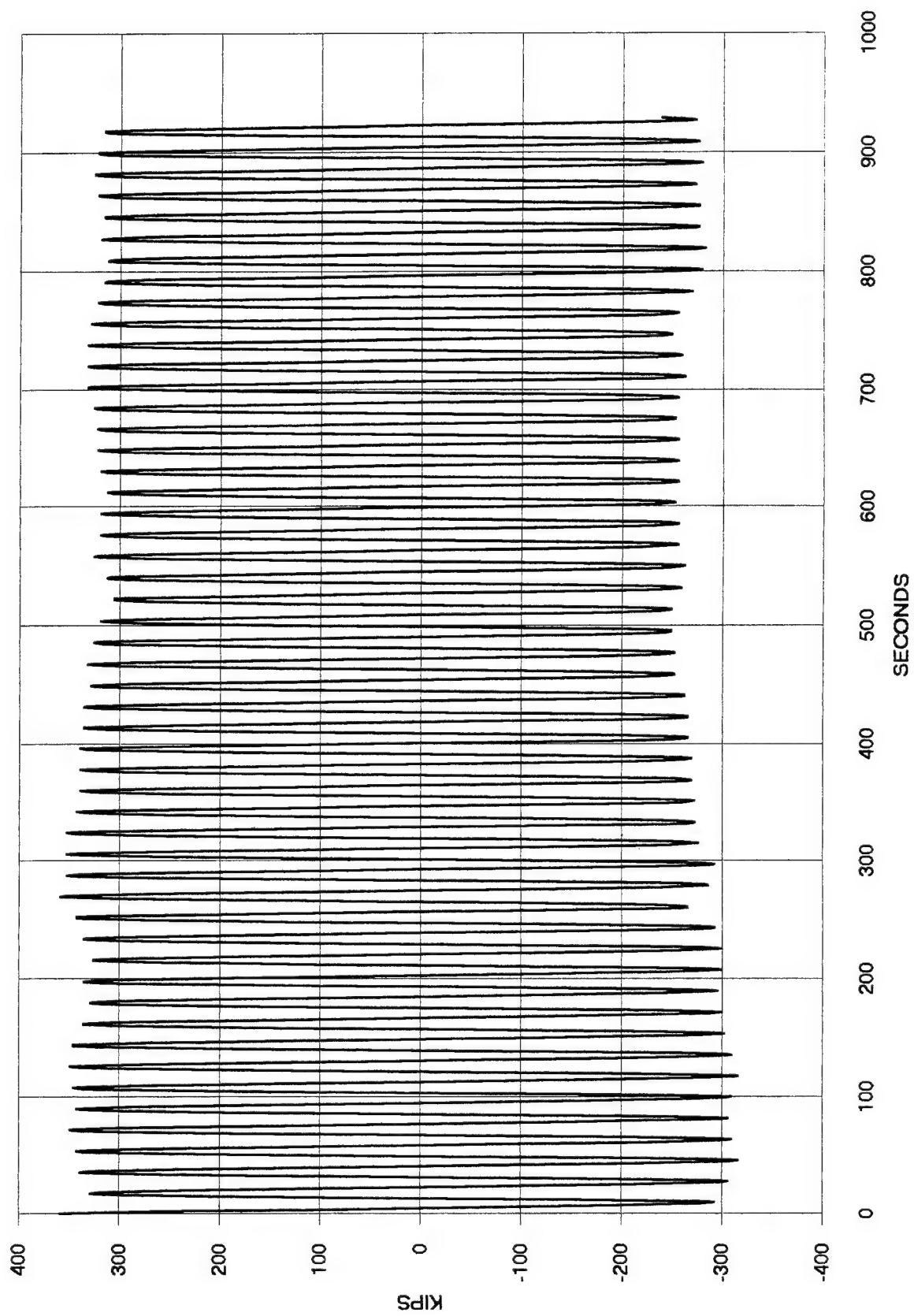
A545 - BT-1 THP (DRY)



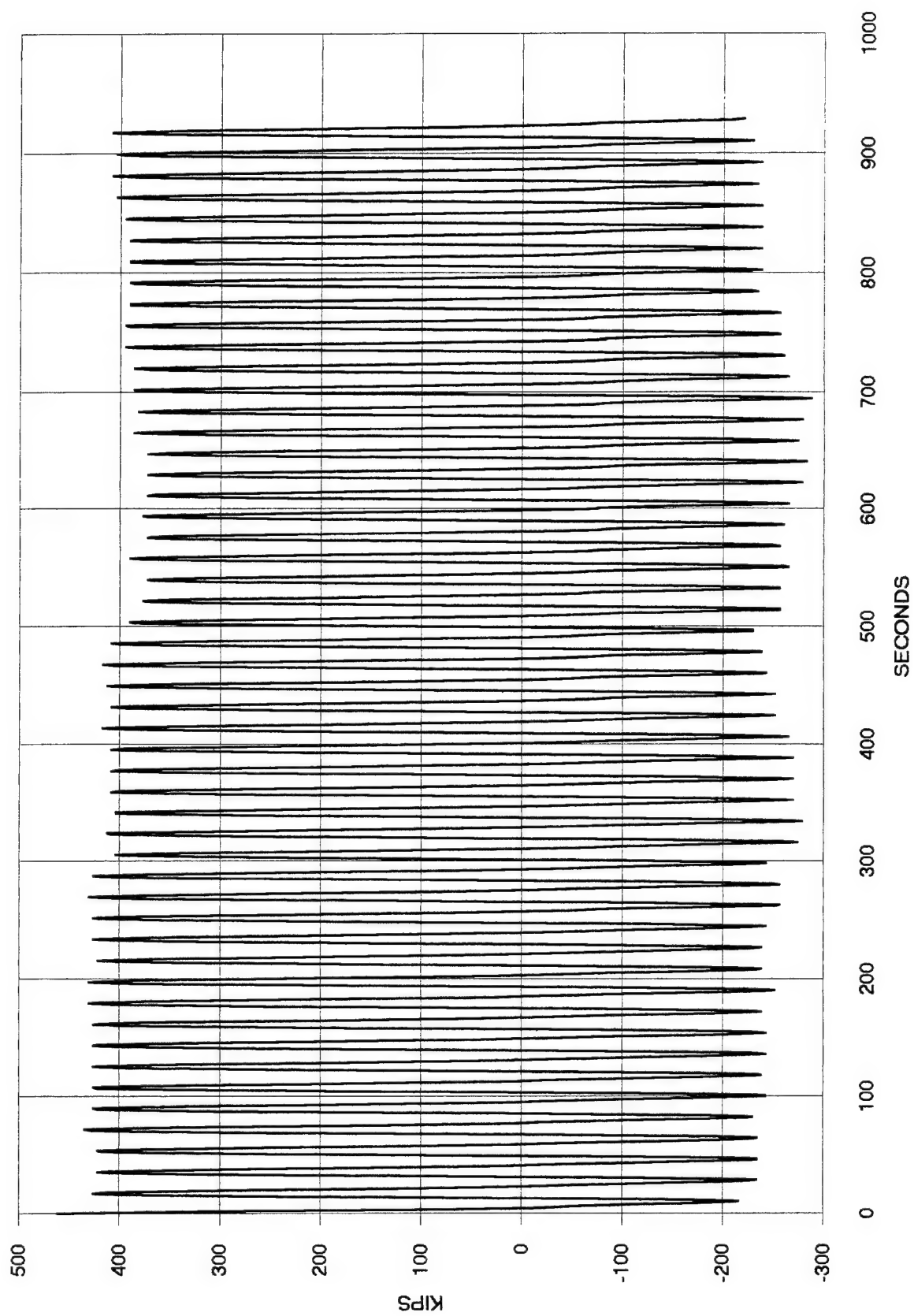
A545 - BT-3 THP (INV. CONE)



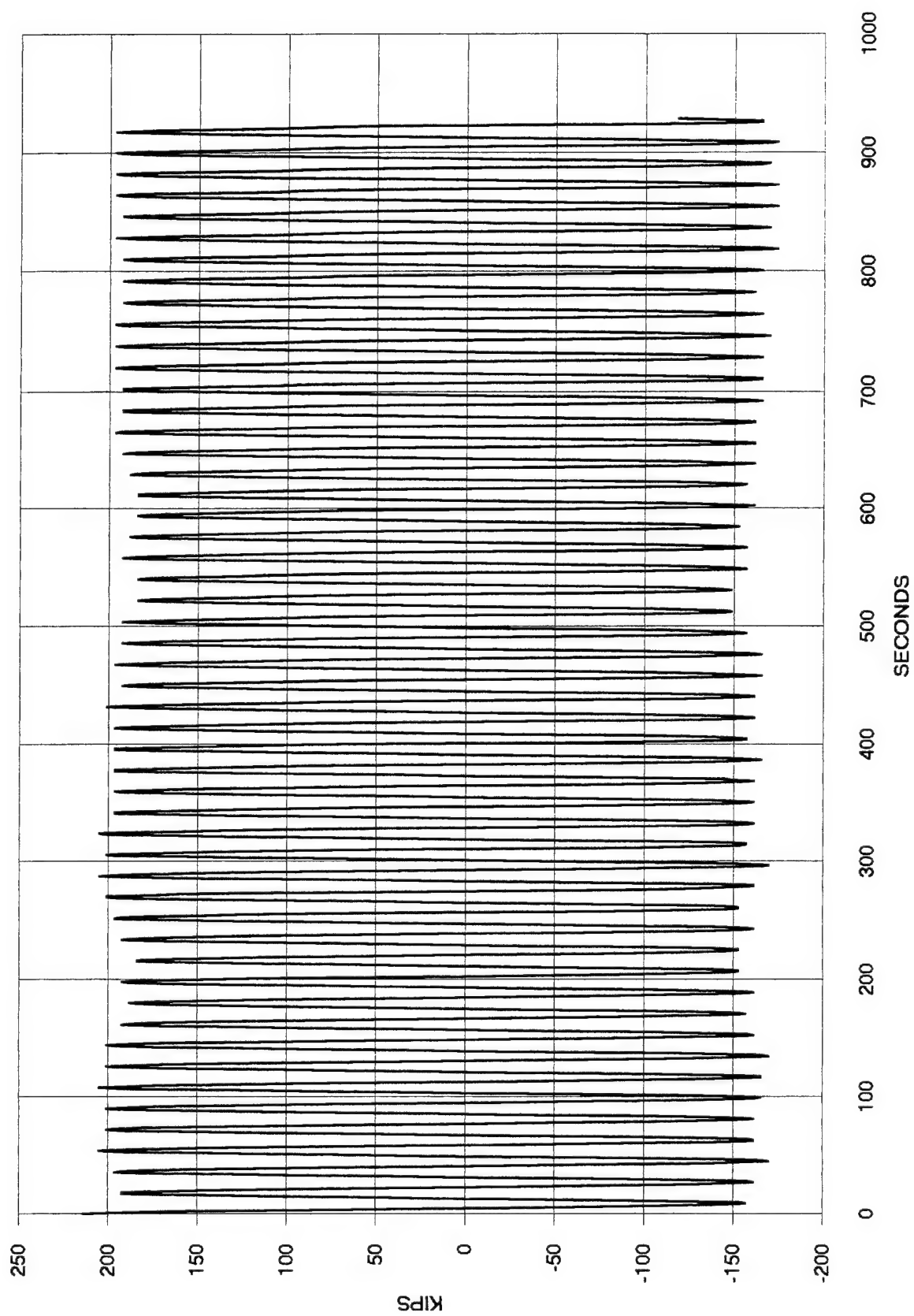
A545 - BT-4 THP (SEGMENTED)



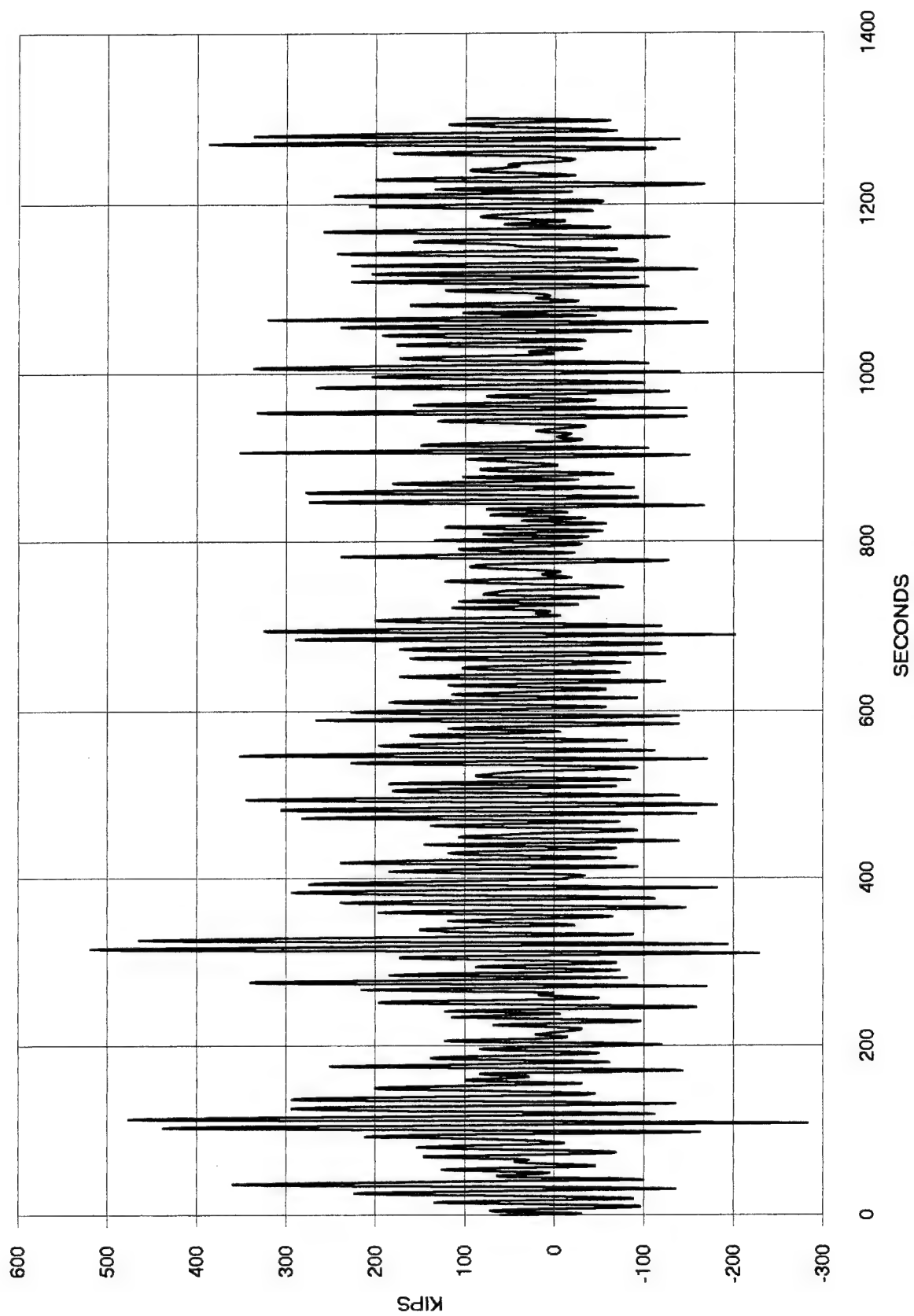
A545 - BT-5 THP (LINK BUOY)



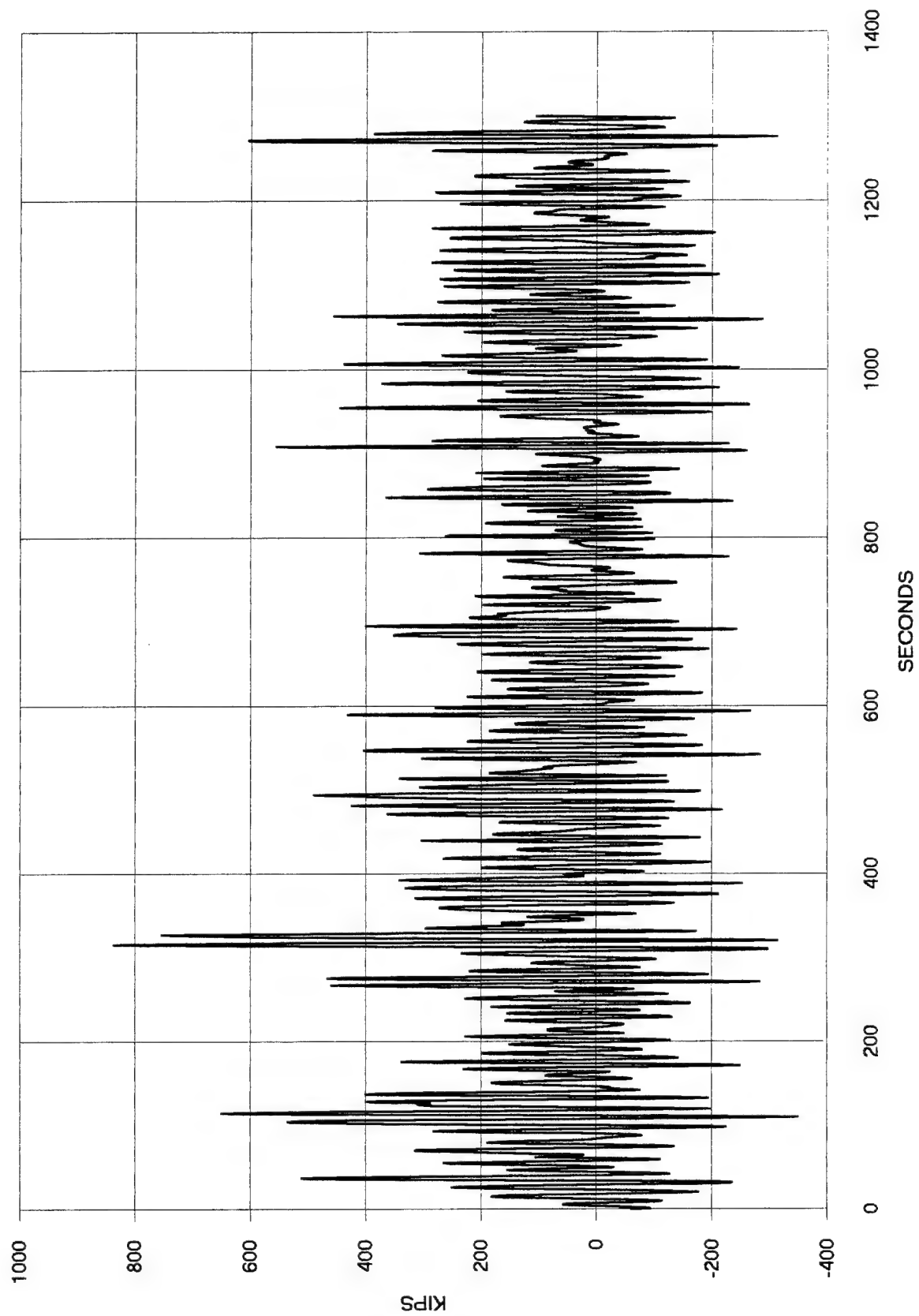
A545 - BT-6 THP (HOUR GLASS)



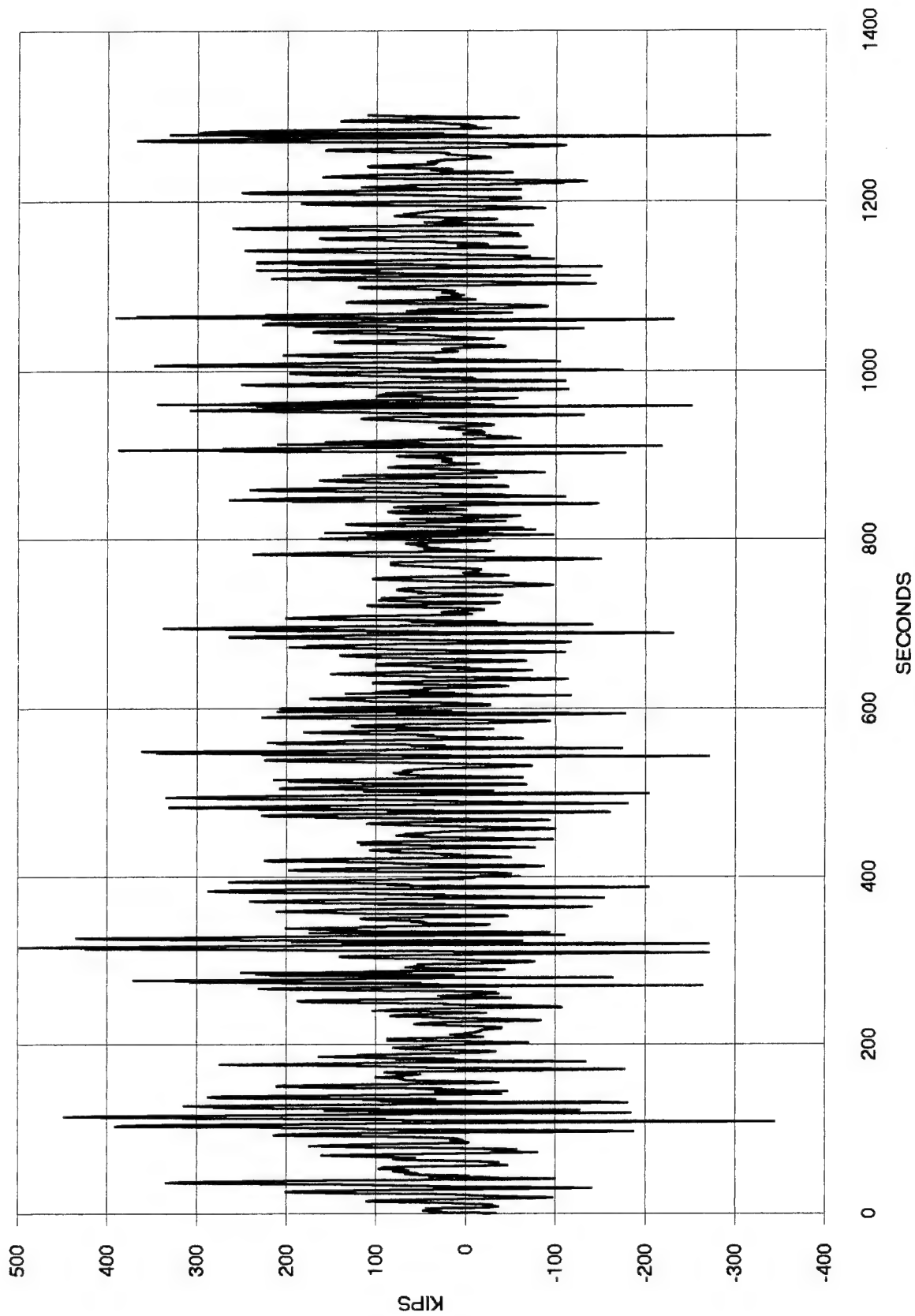
A546 - BT-1 THP (DRY)



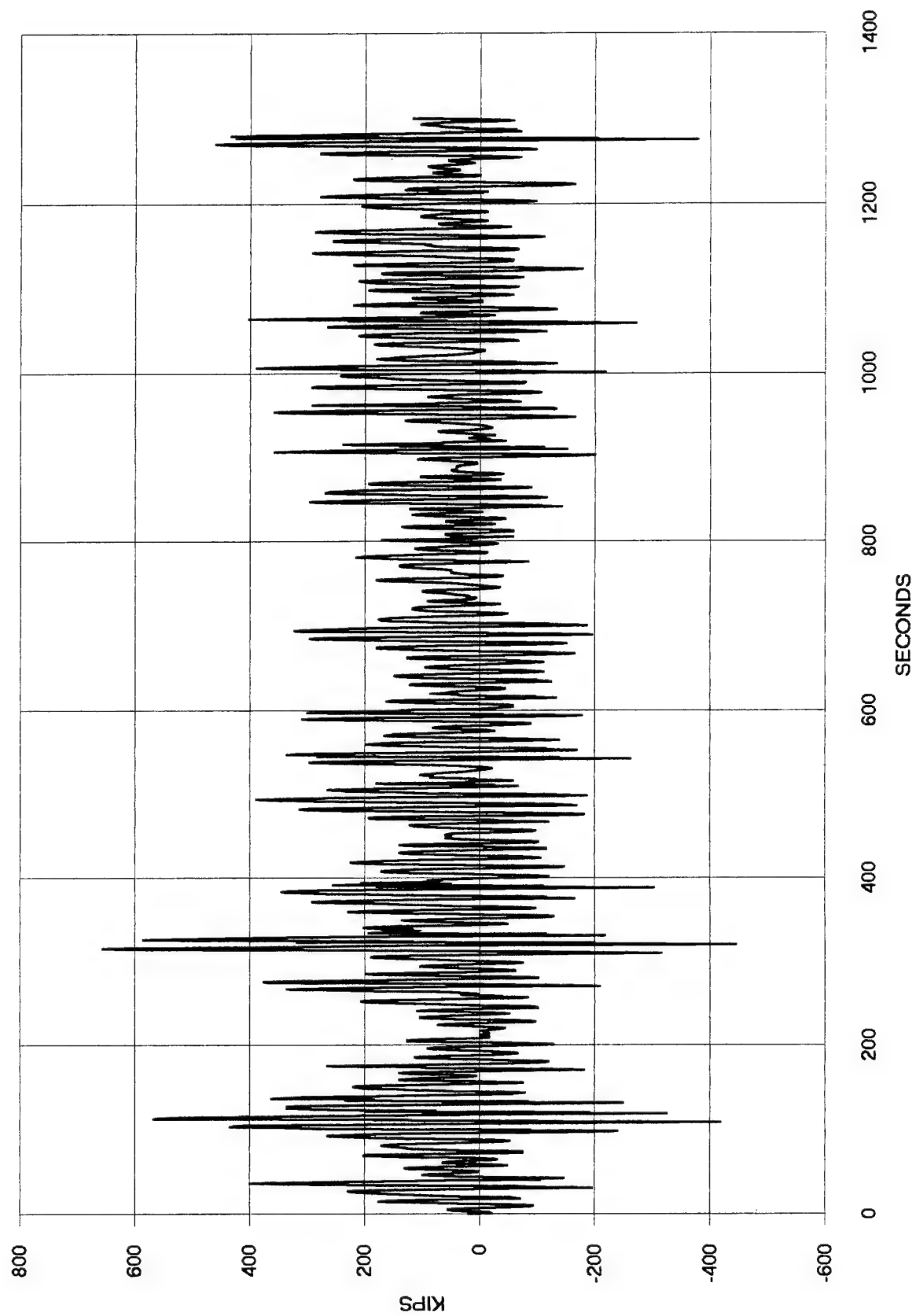
A546 - BT-3 THP (INV. CONE)



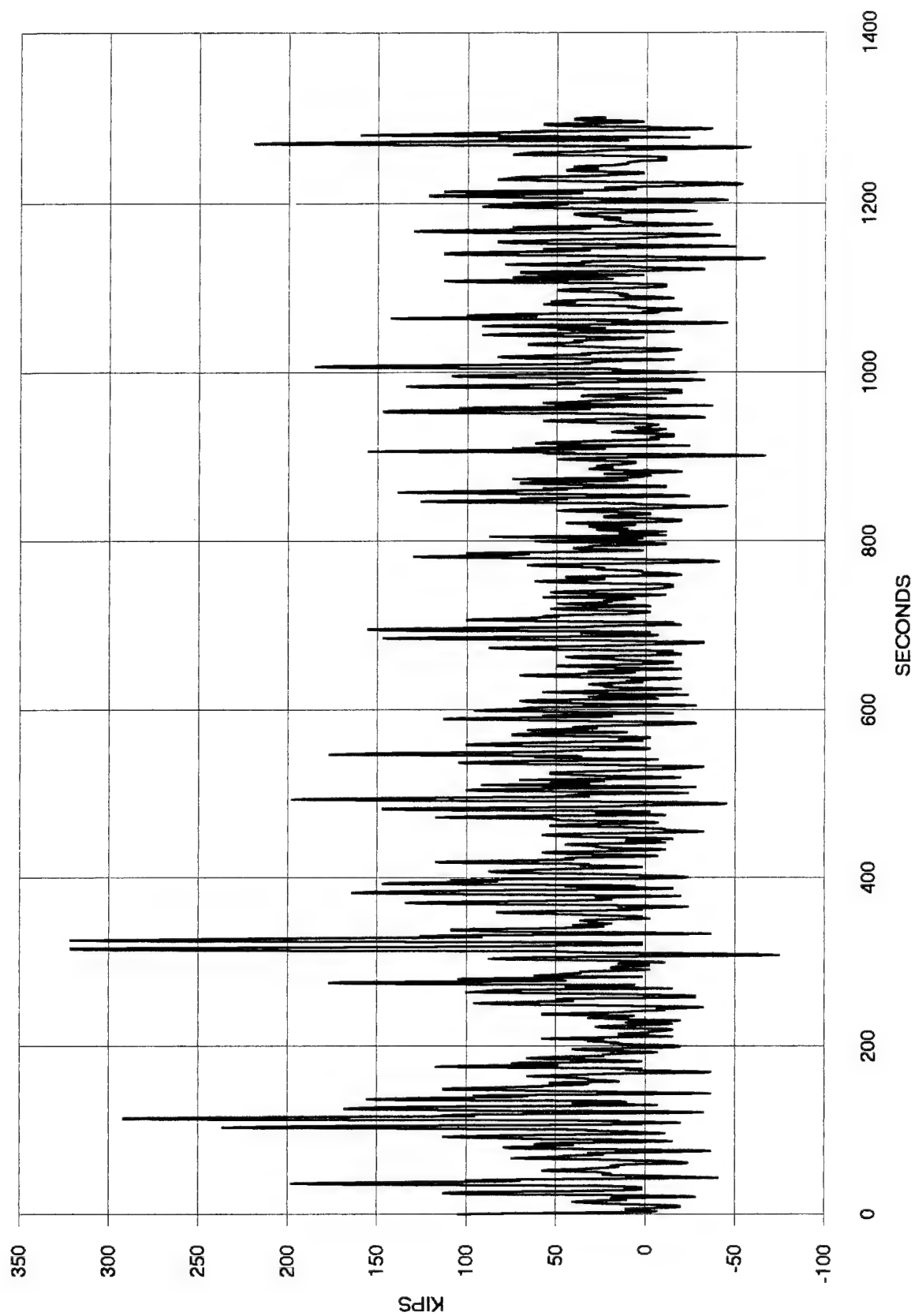
A546 - BT-4 THP (SEGMENTED)



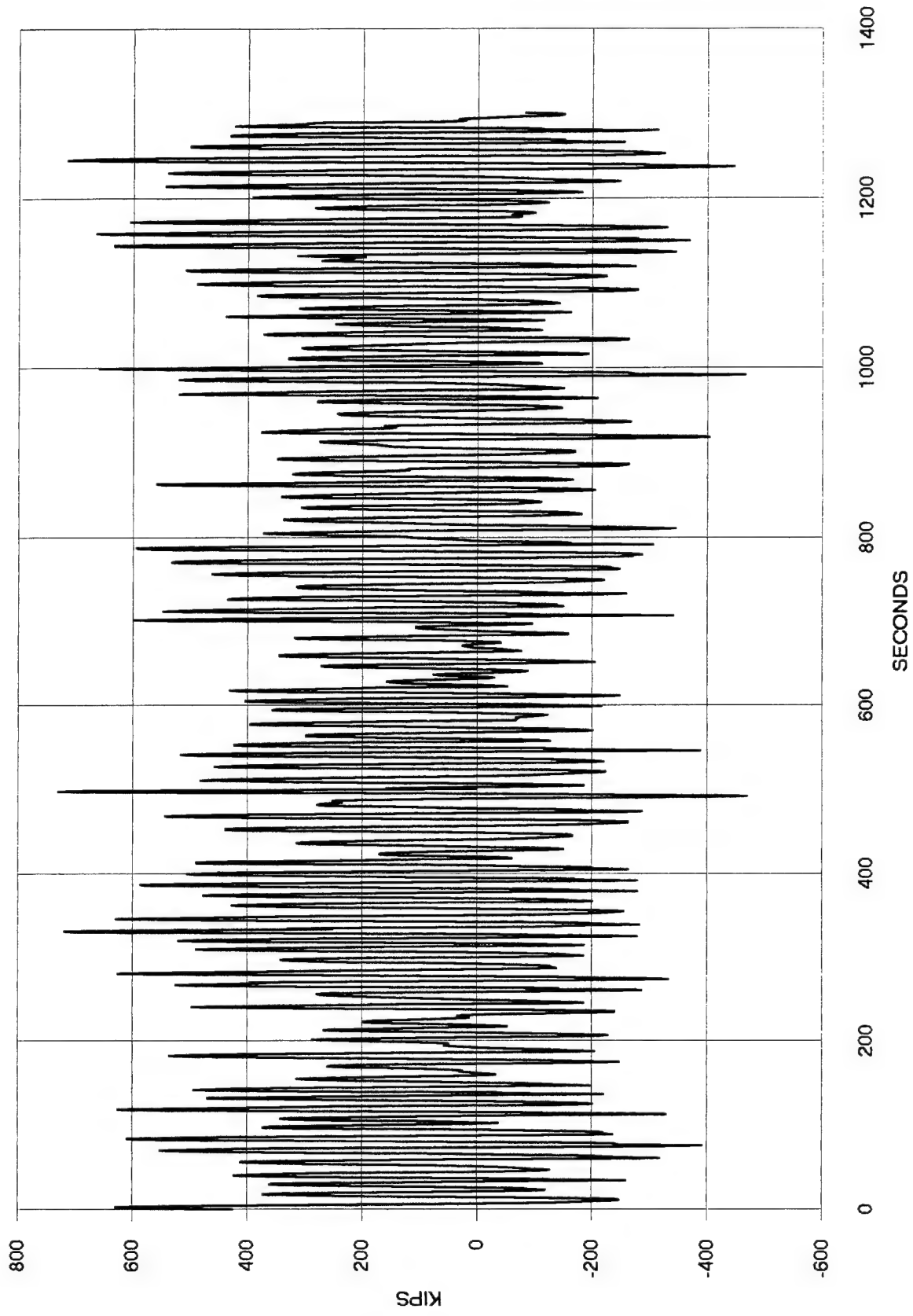
A546 - BT-5 THP (LINK BUOY)



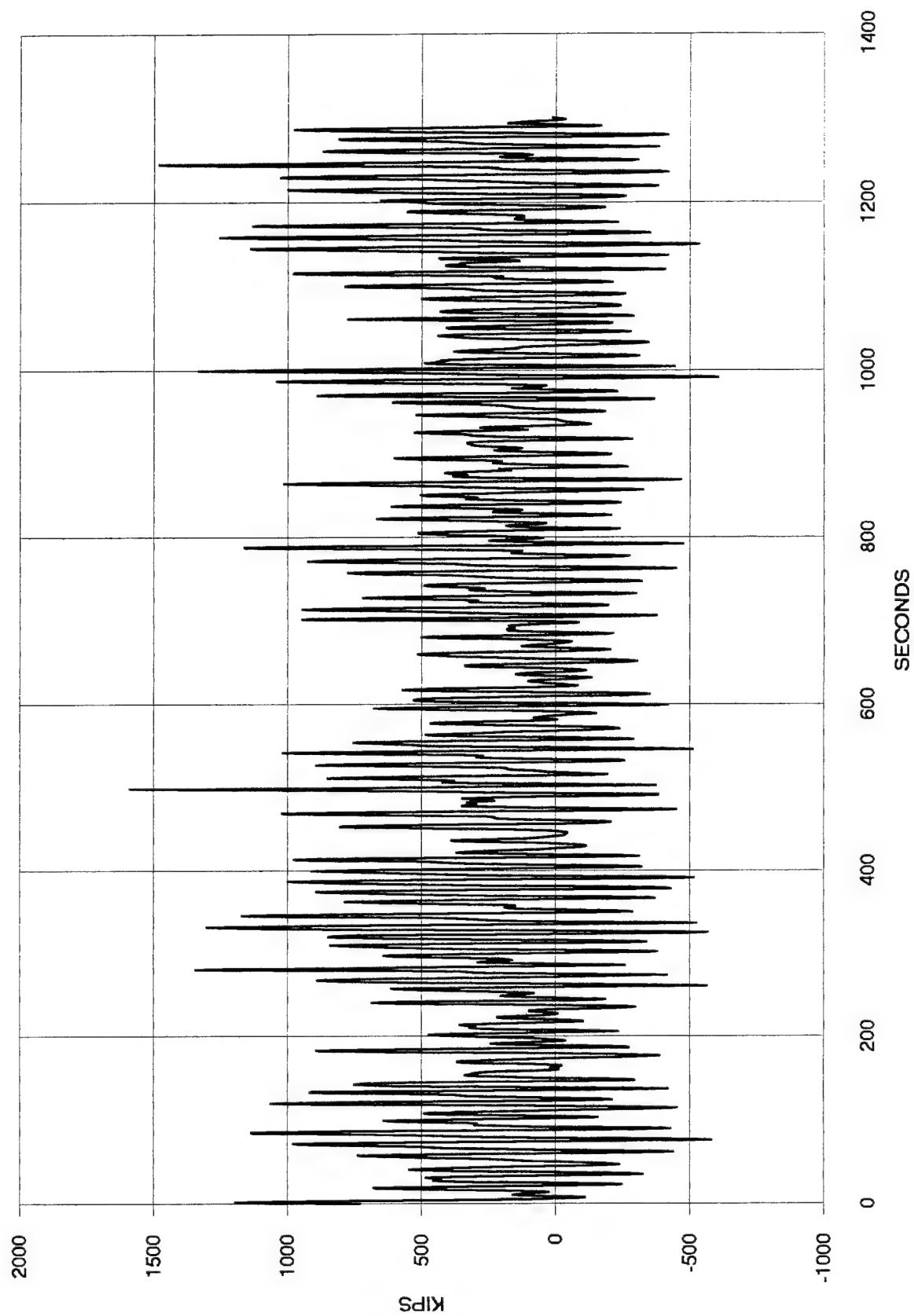
A546 - BT-6 THP (HOUR GLASS)



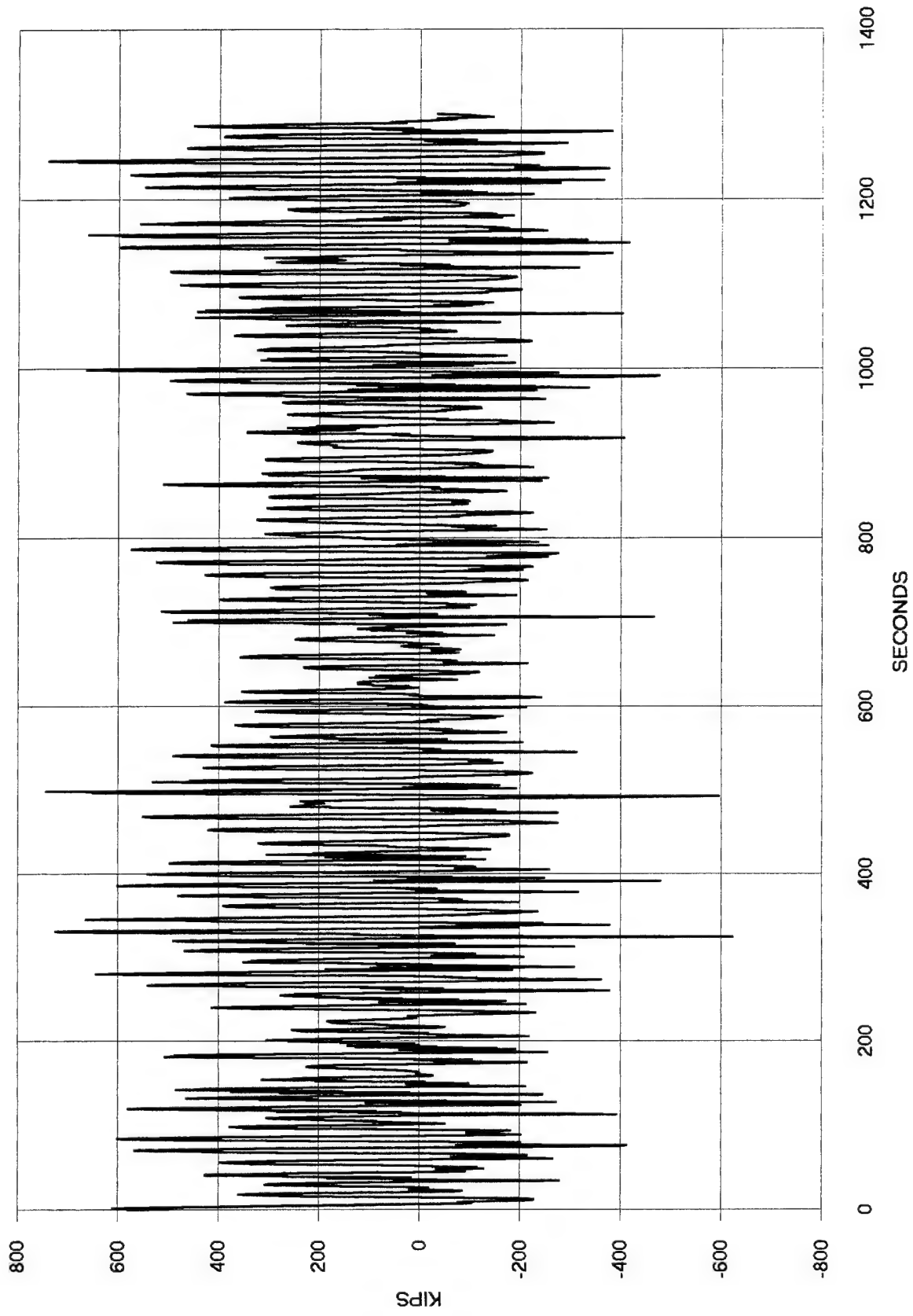
A547 - BT-1 THP (DRY)



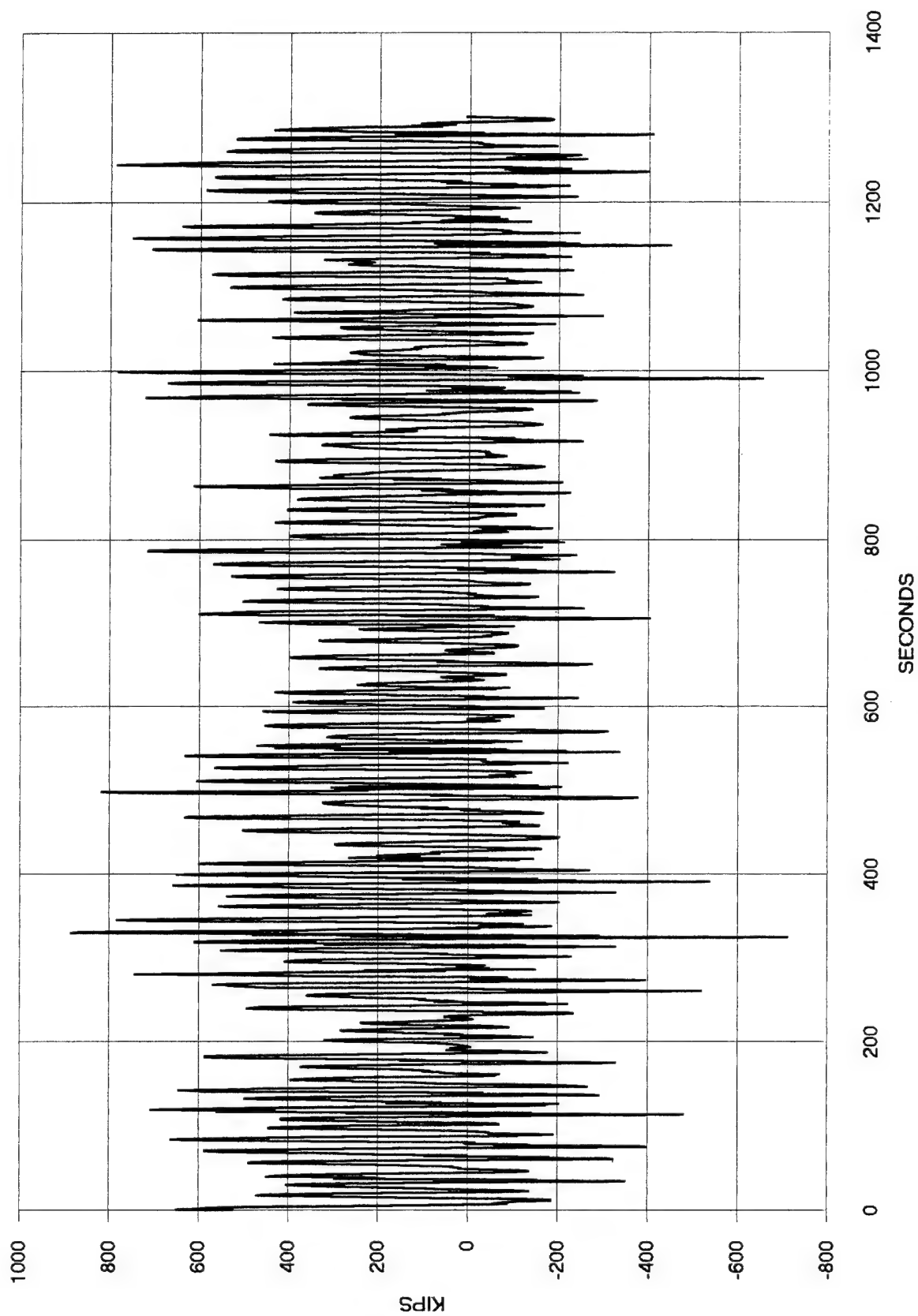
A547 - BT-3 THP (INV. CONE)



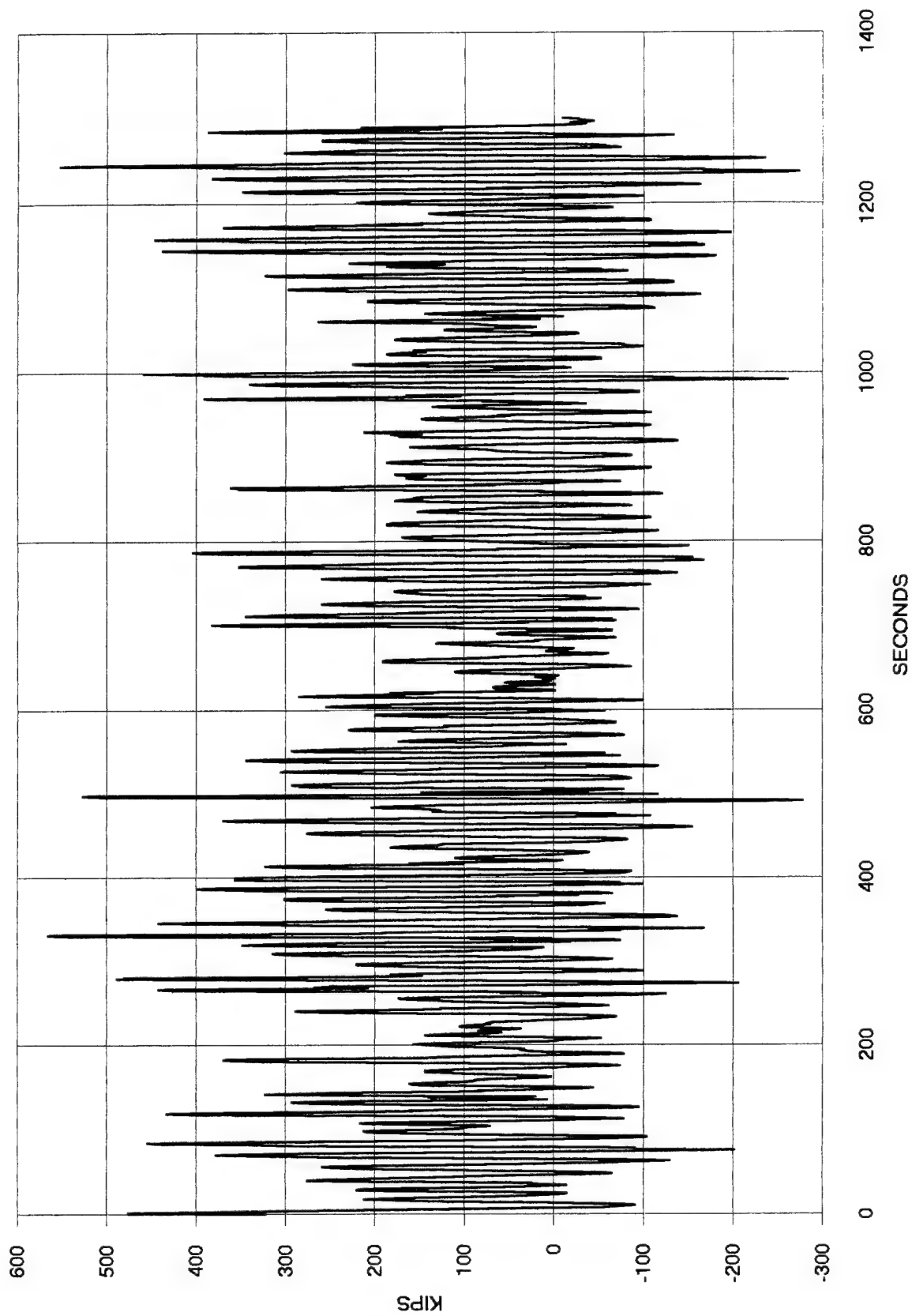
A547 - BT-4 THP (SEGMENTED)



A547 - BT-5 THP (LINK BUOY)



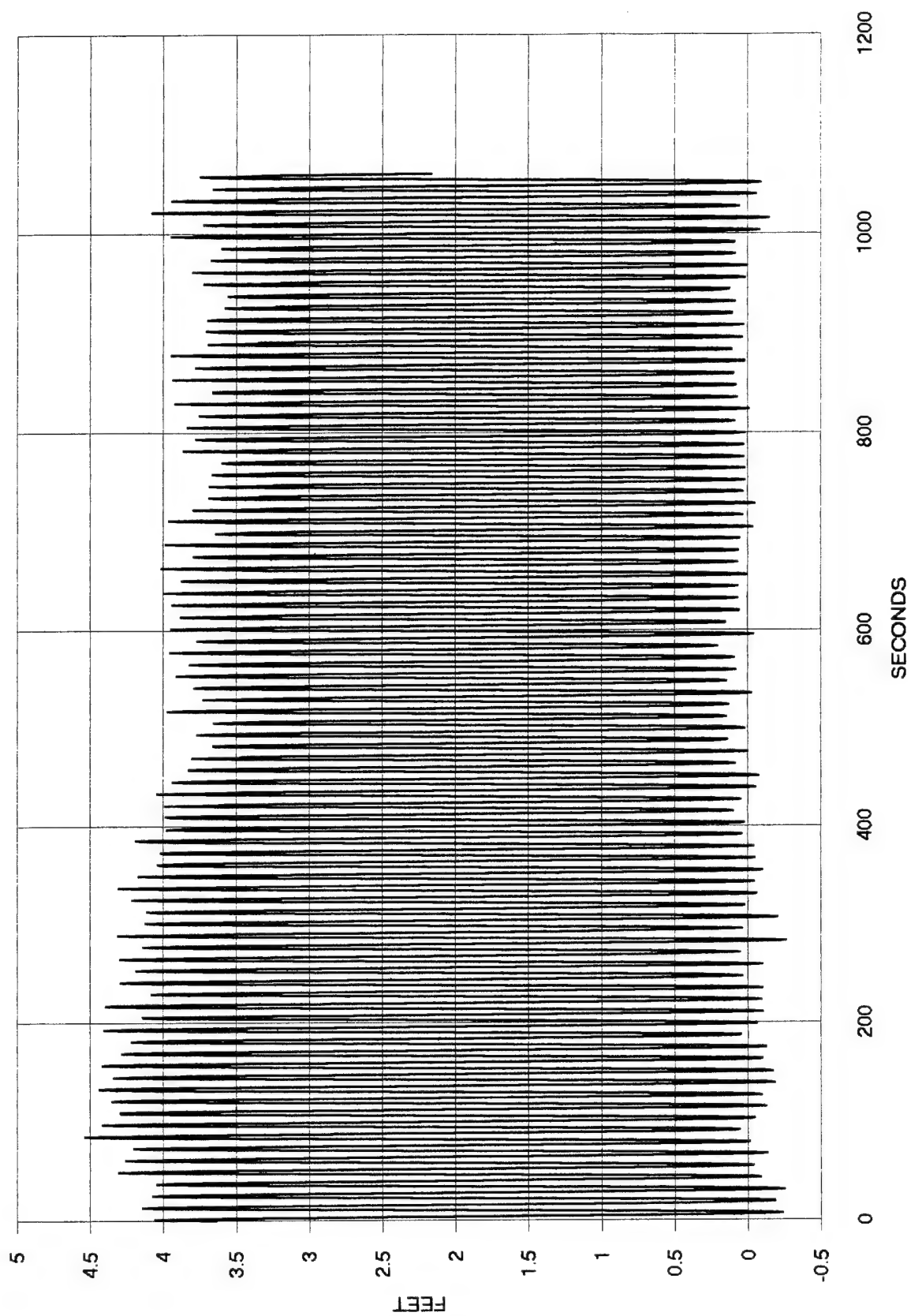
A547 - BT-6 THP (HOUR GLASS)



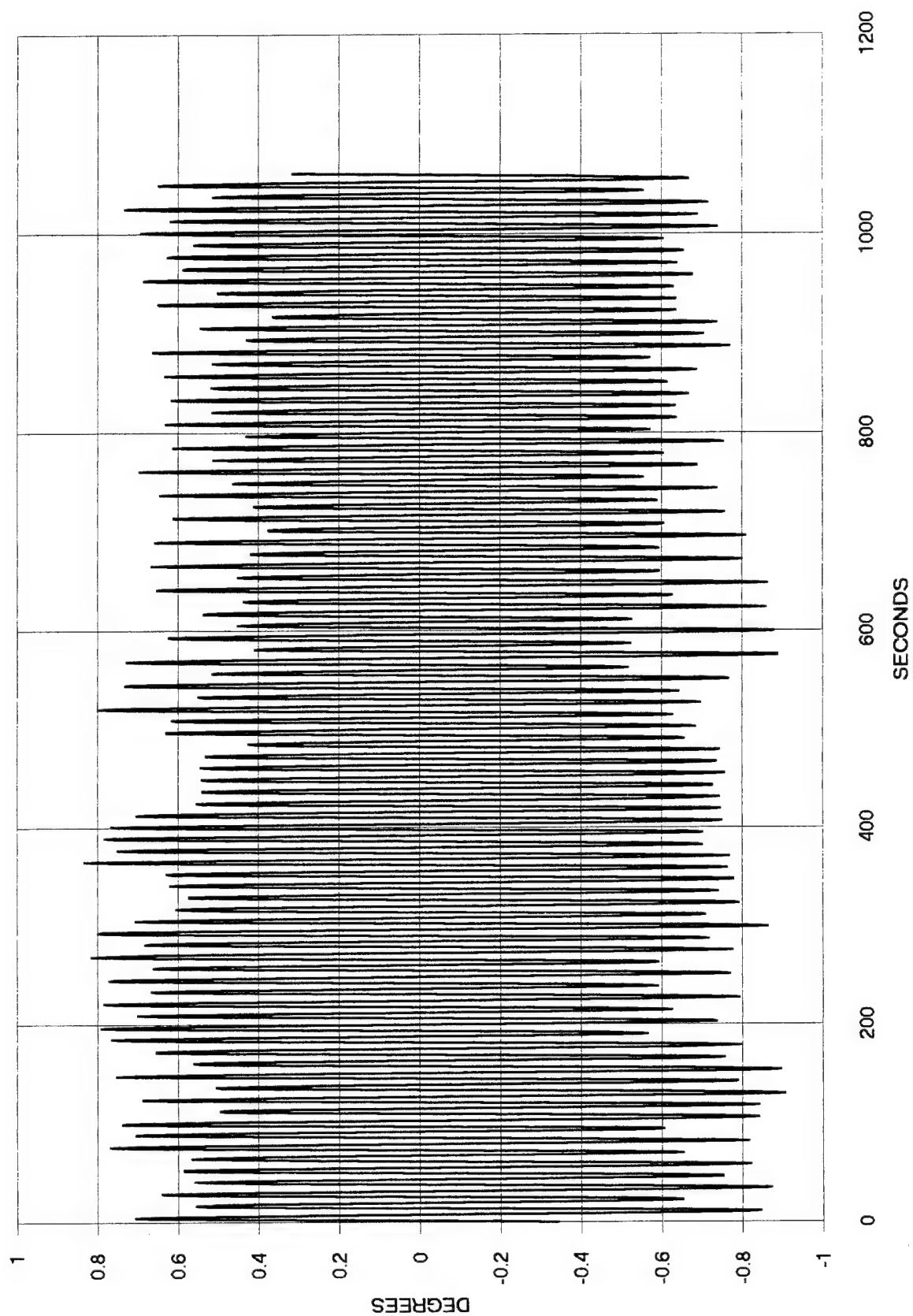
APPENDIX L

TIME HISTORY PLOTS, SEMI-SUBMERSIBLE SEAKEEPING, HINGED BUOYS

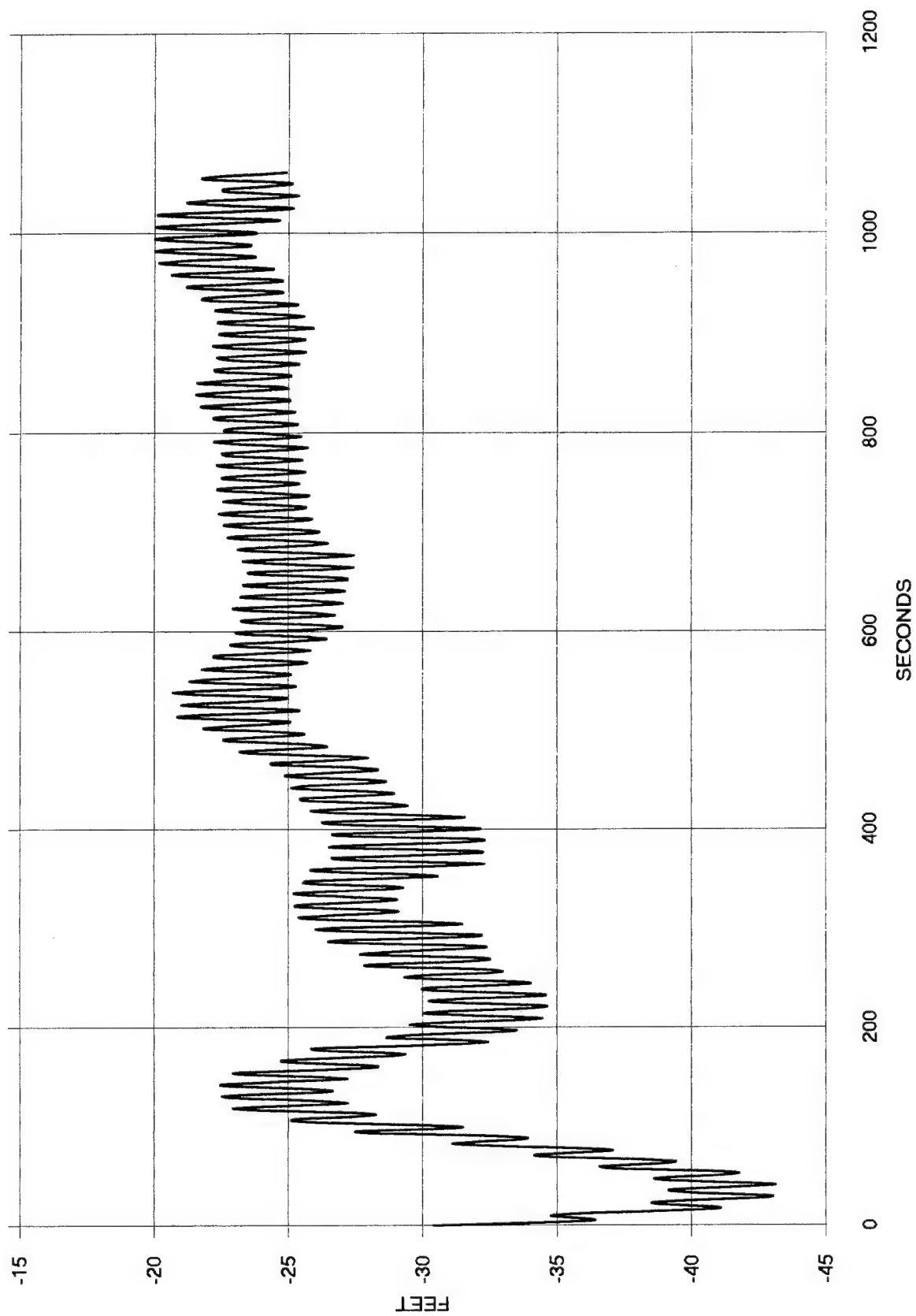
A1341 - HEAVE THP



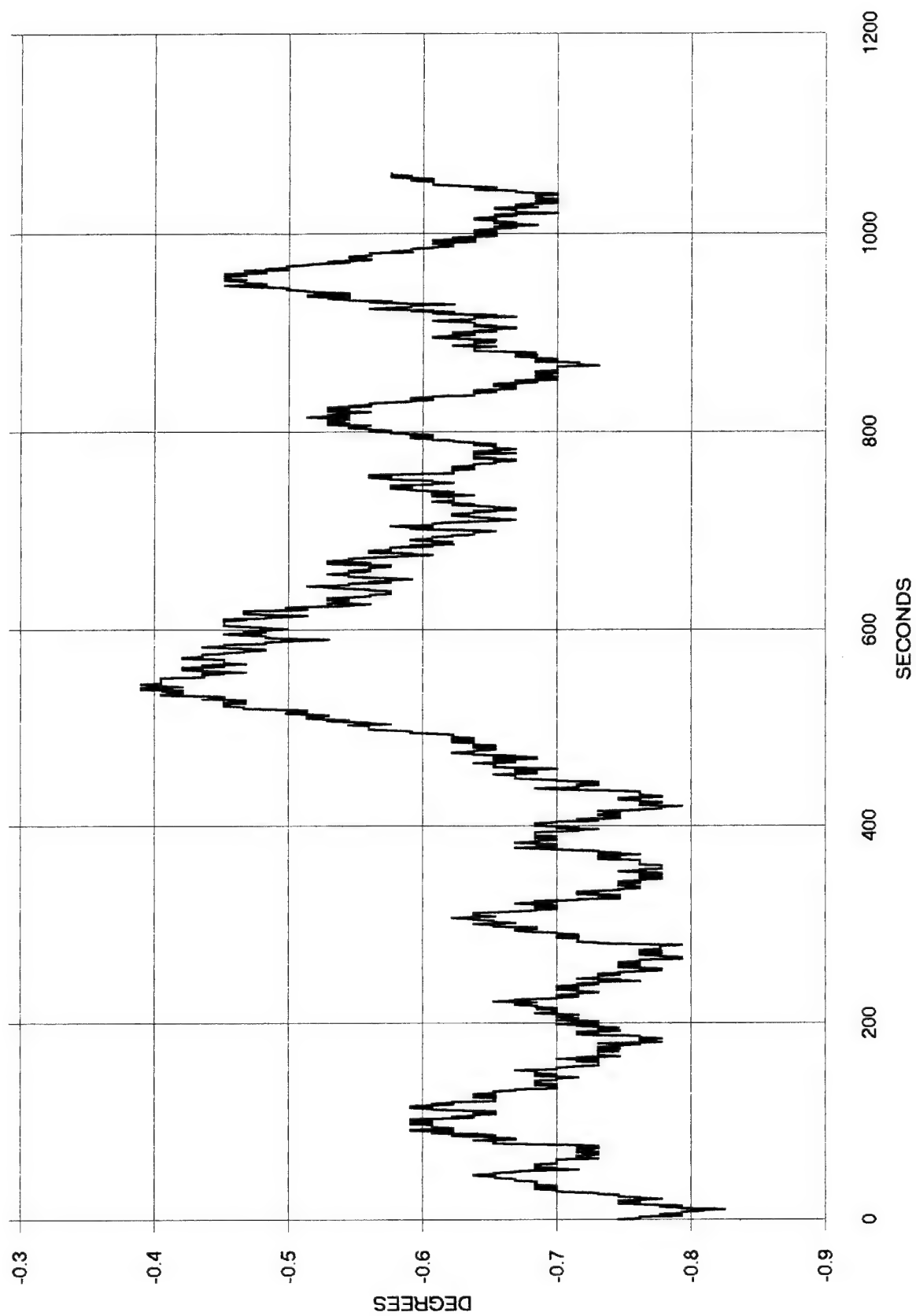
A1341 - PITCH THP



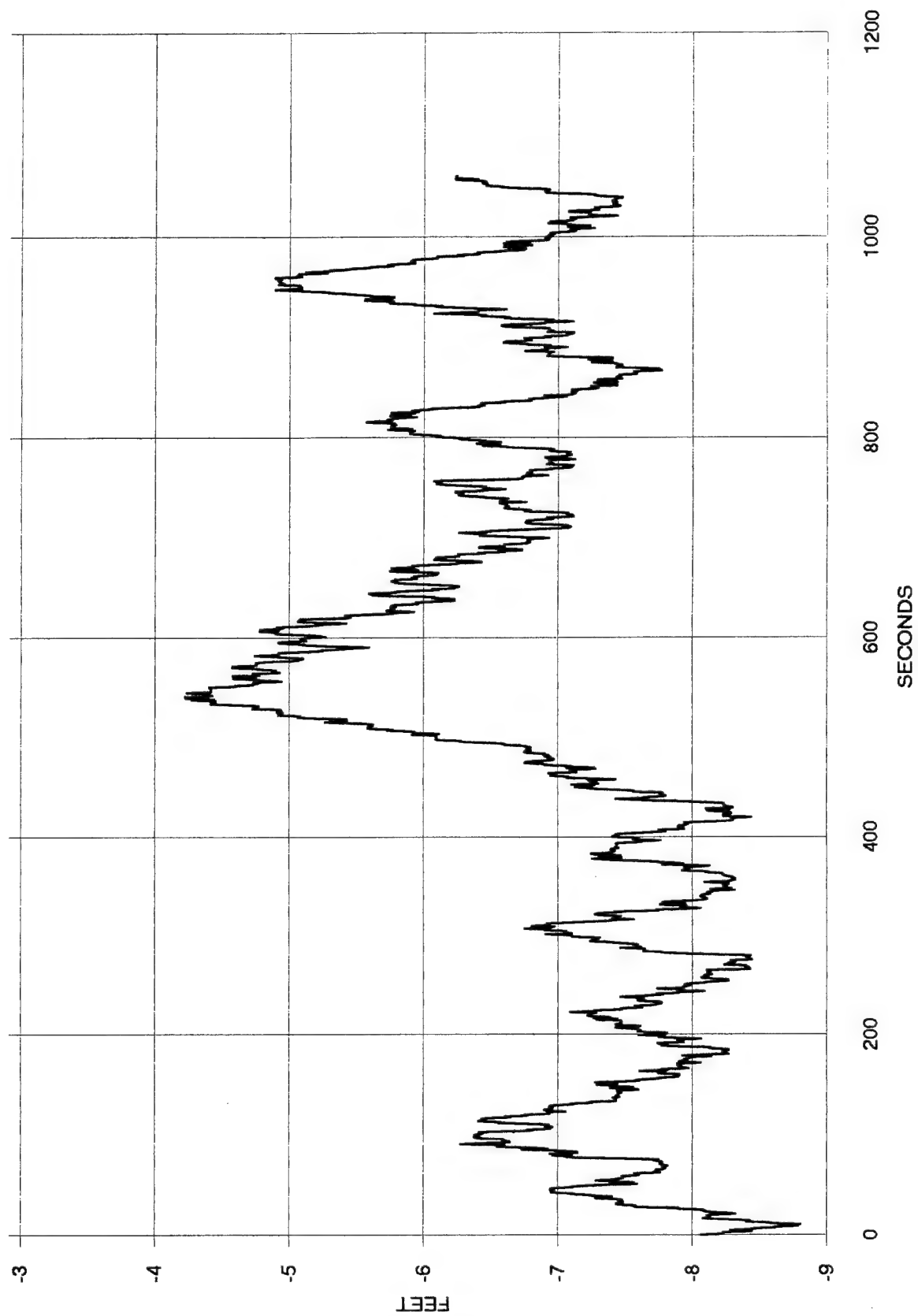
A1341 - SURGE THP



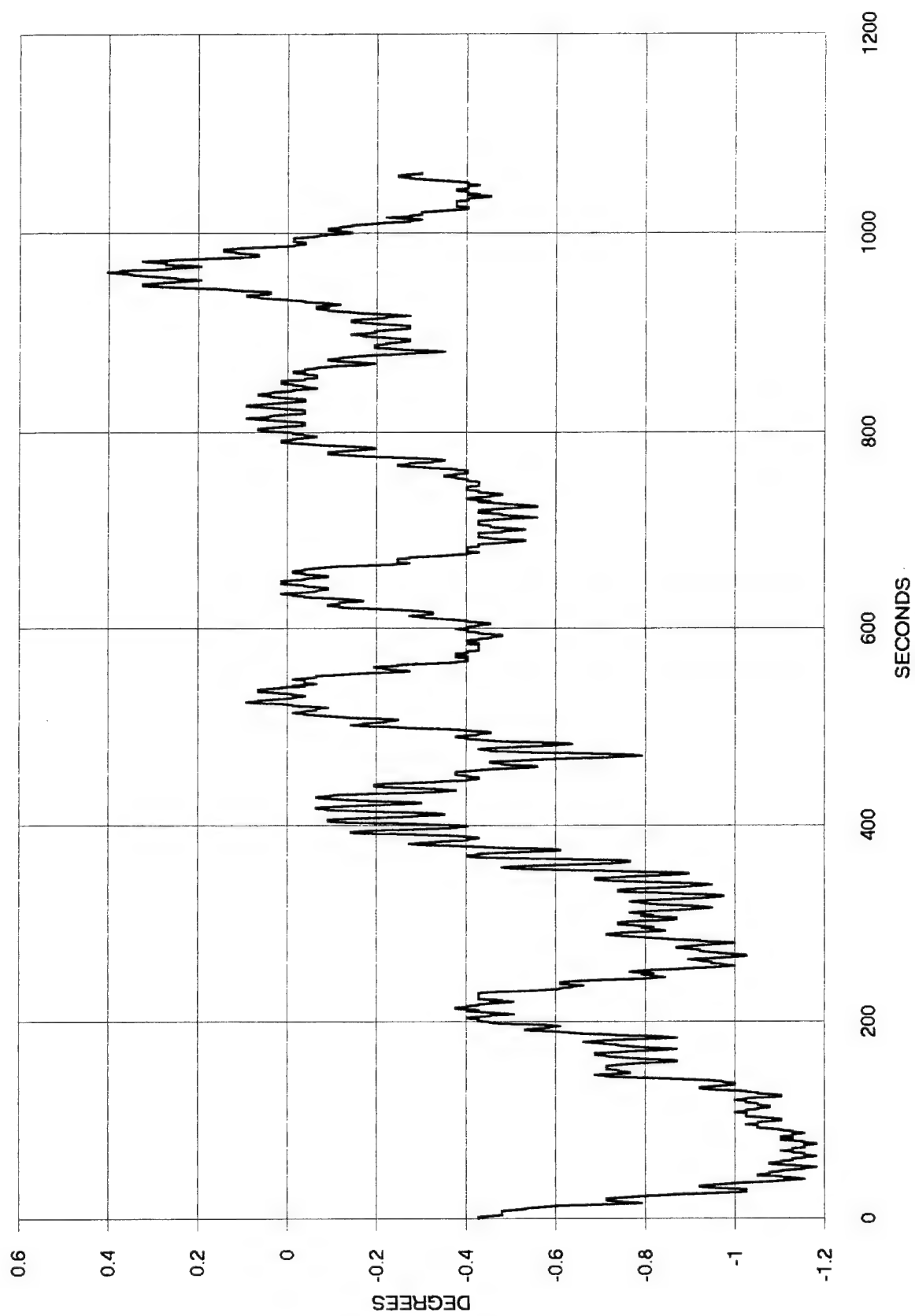
A1341 - ROLL THP



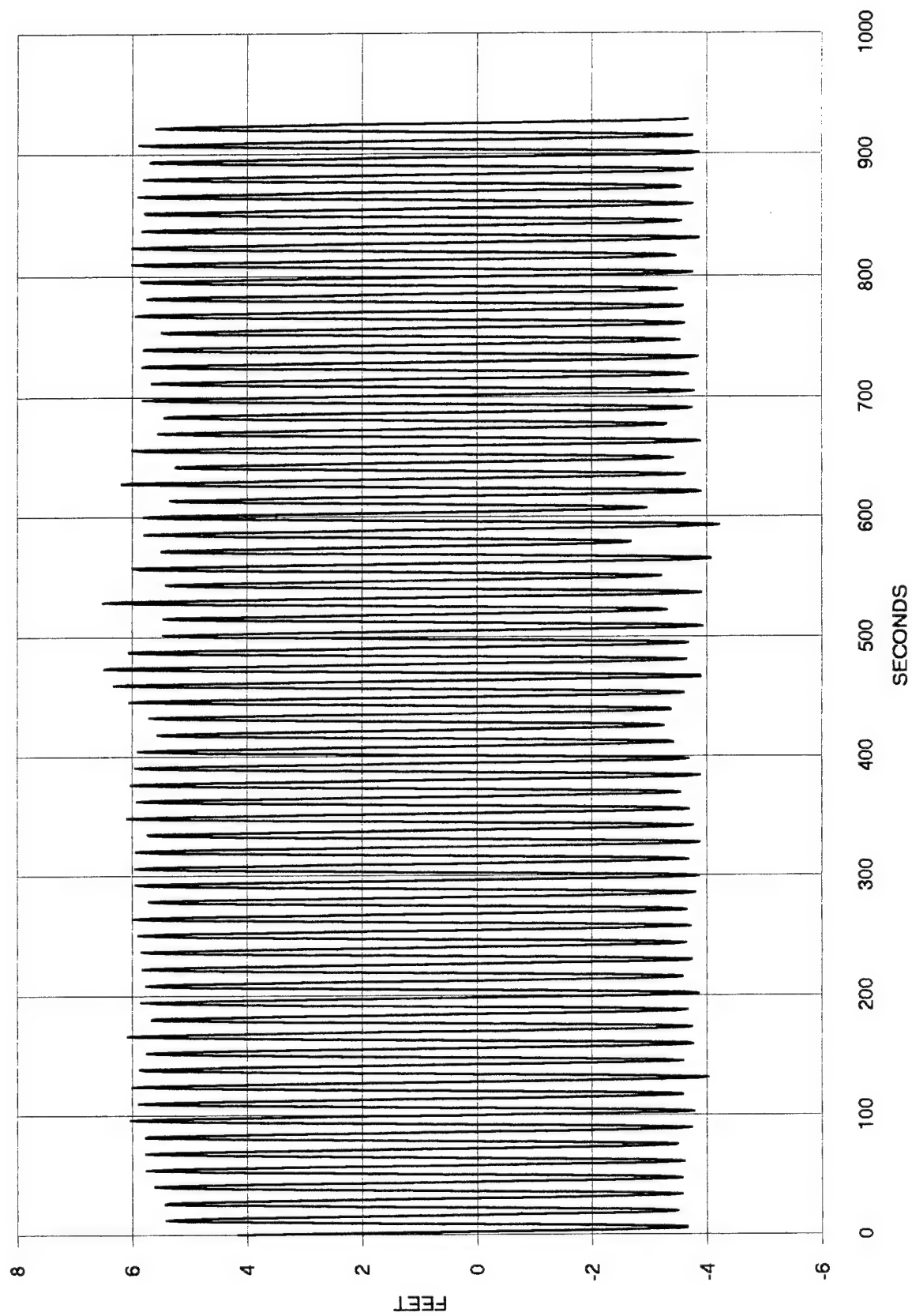
A1341 - SWAY THP



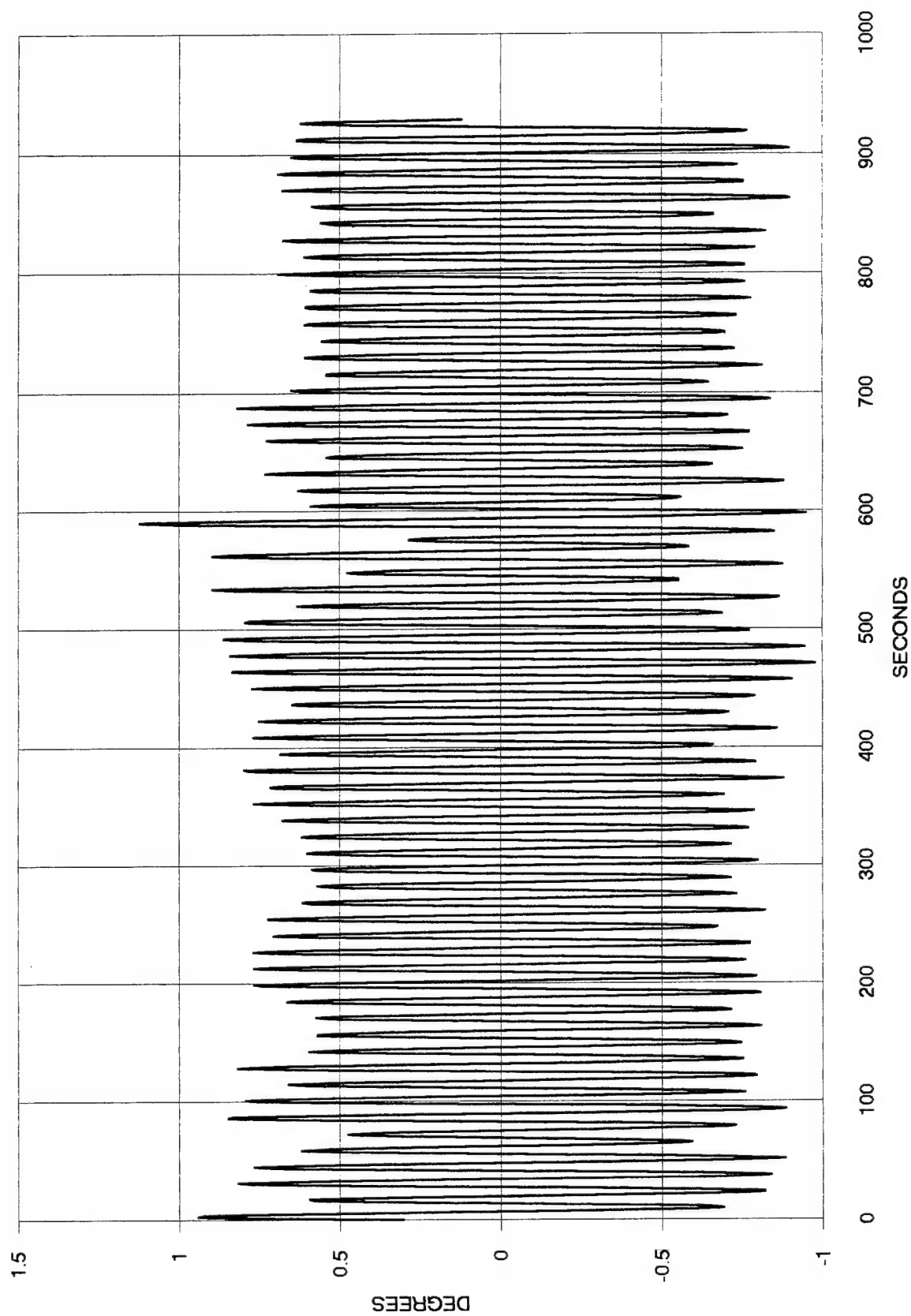
A1341 - YAW THP



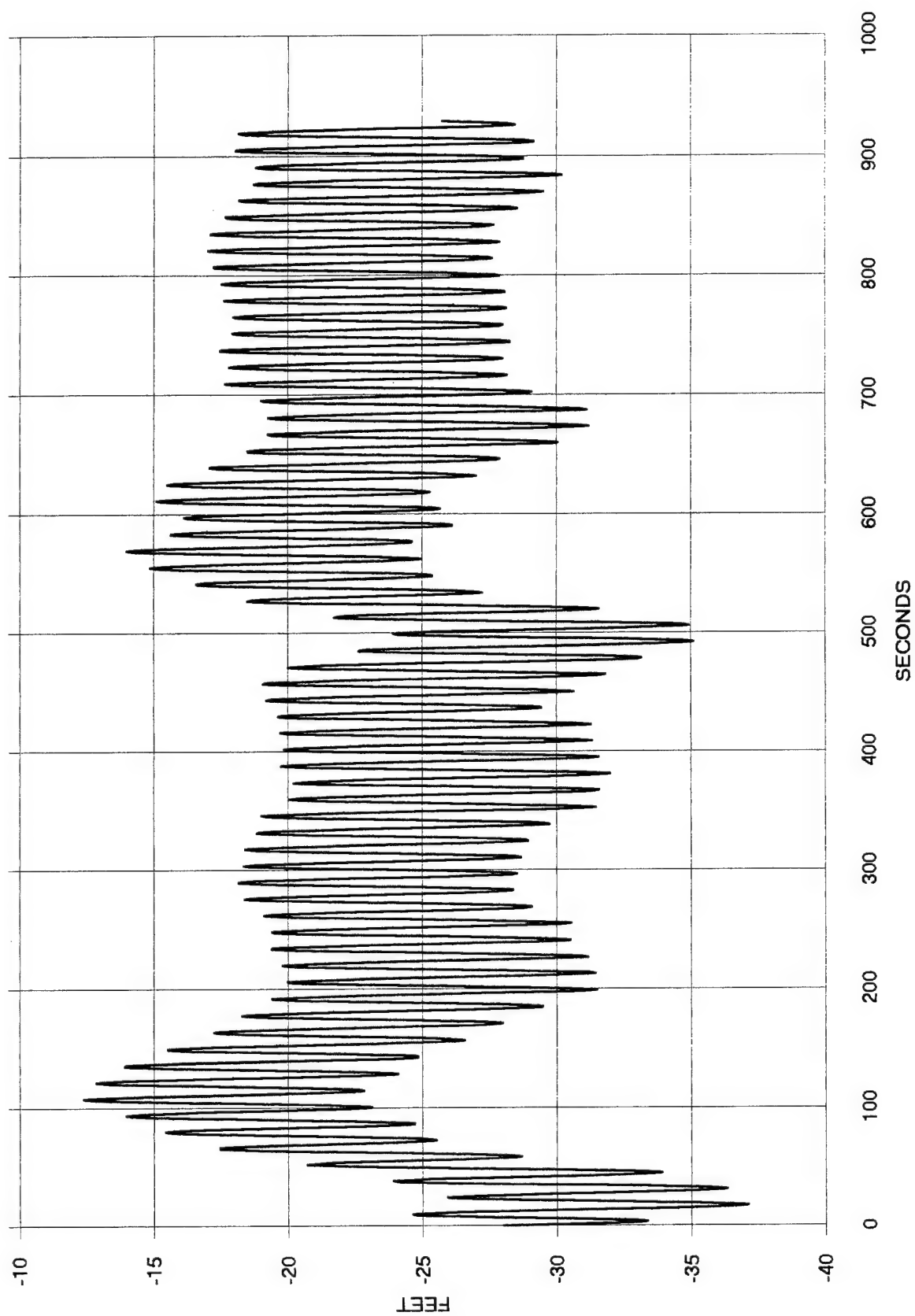
A1342 - HEAVE THP



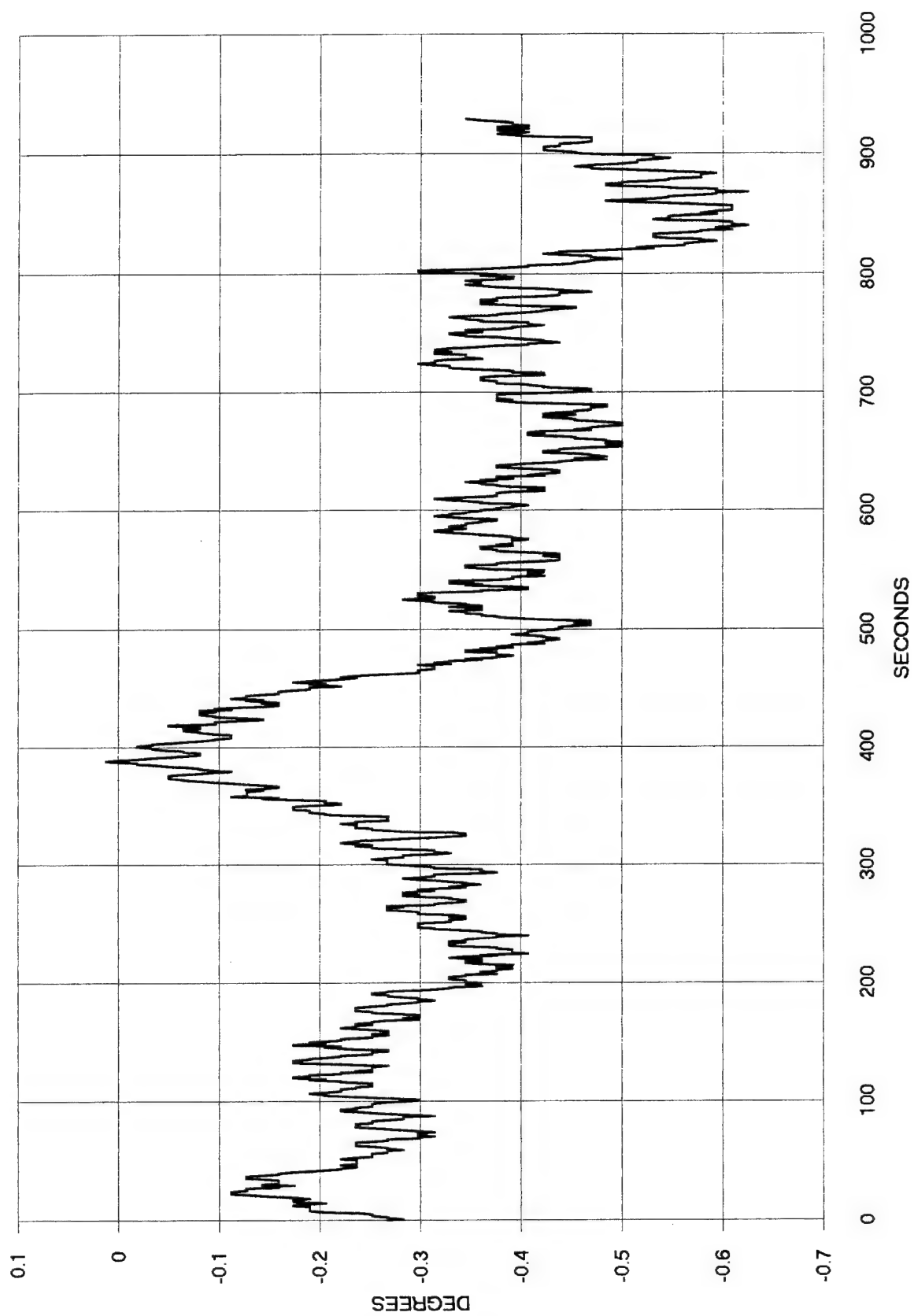
A1342 - PITCH THP



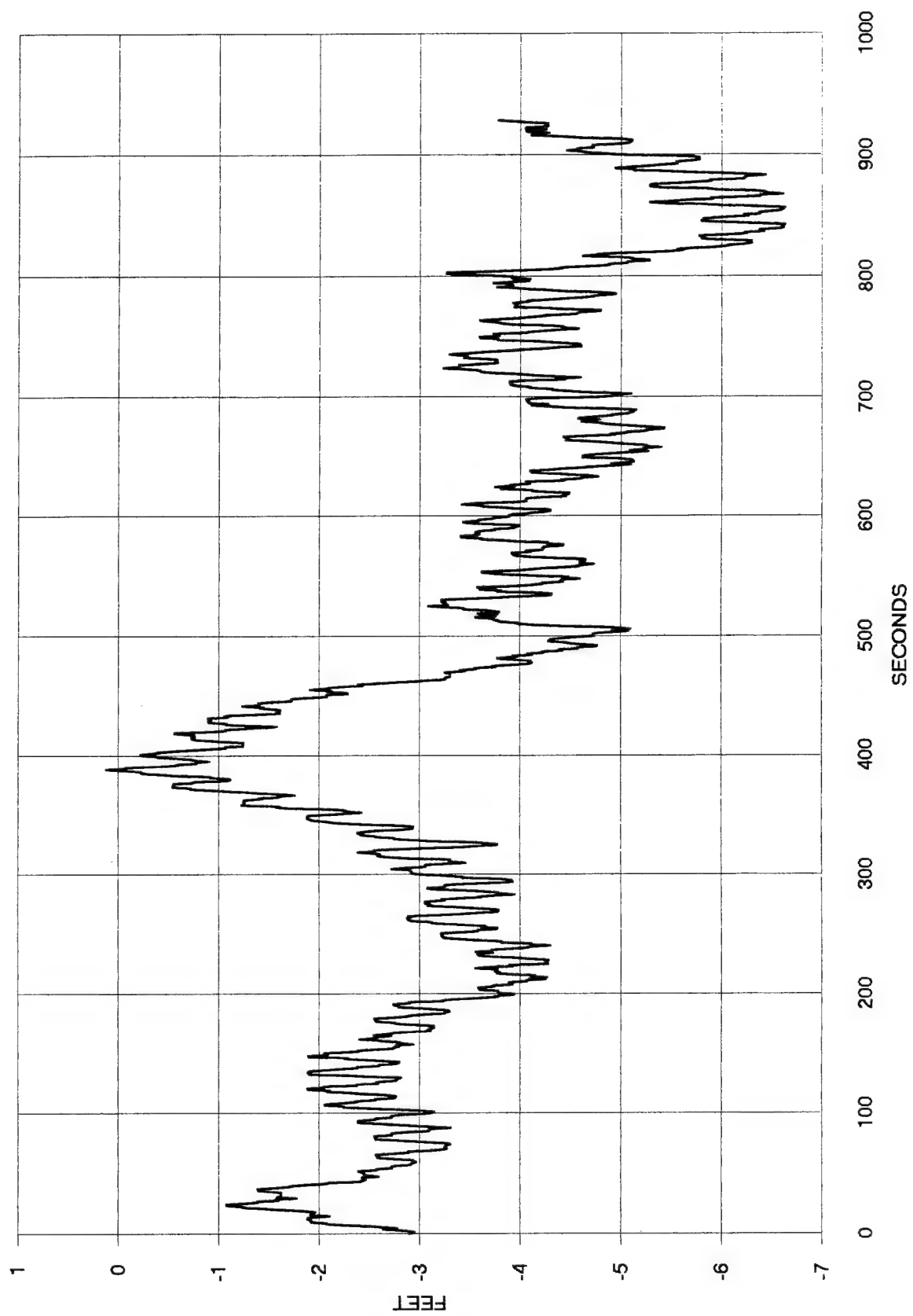
A1342 - SURGE THP



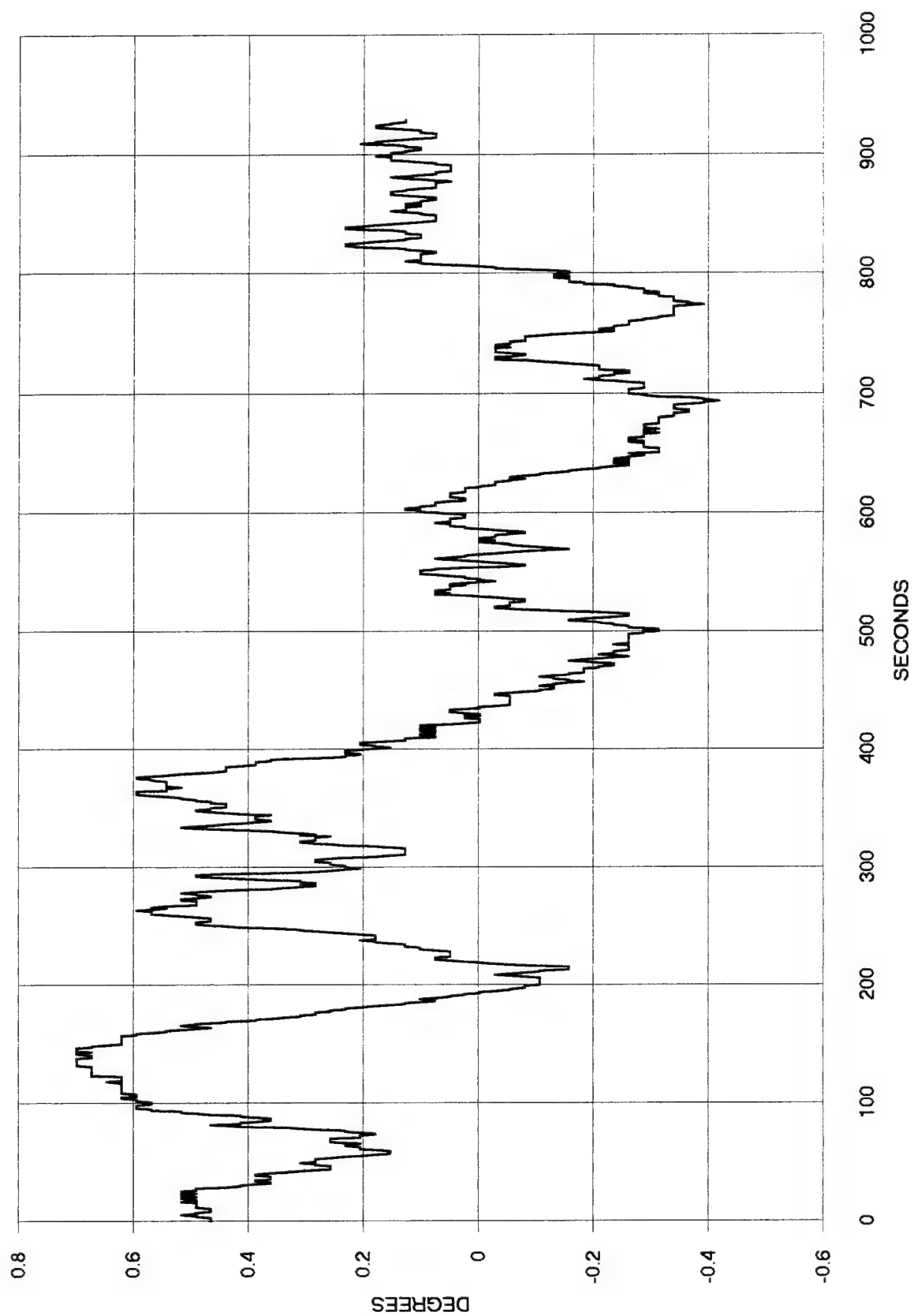
A1342 - ROLL THP



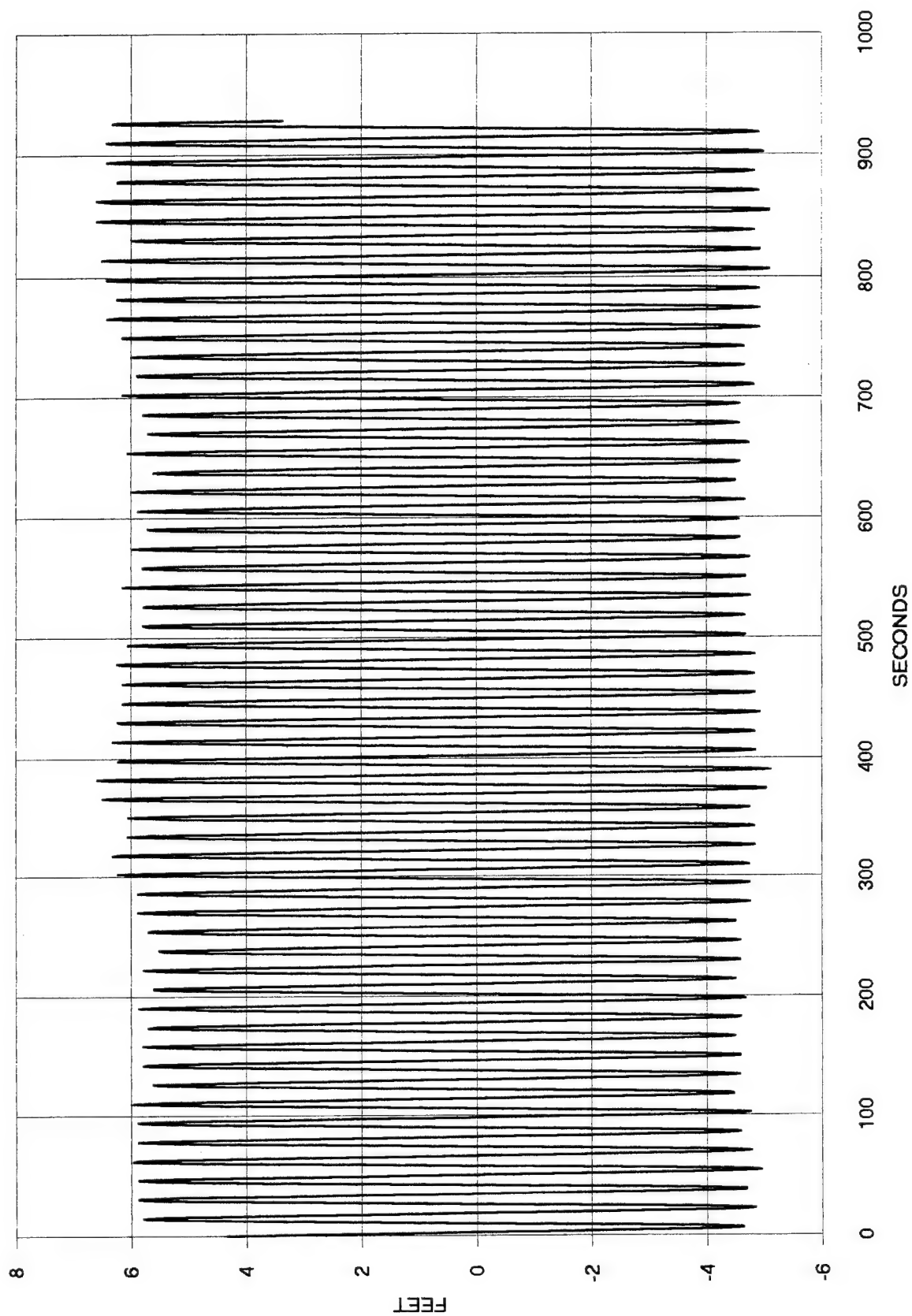
A1342 - SWAY THP



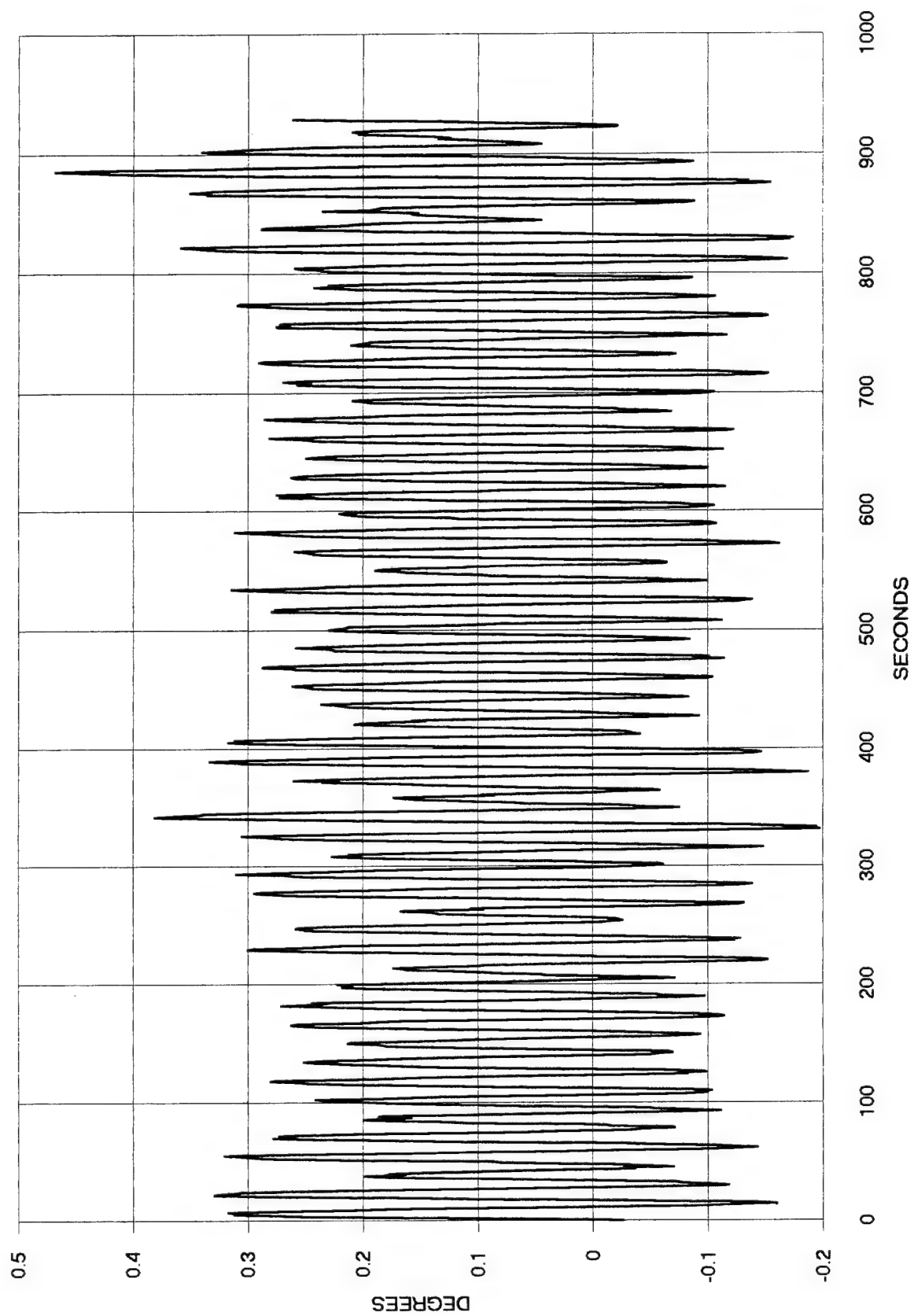
A1342 - YAW THP



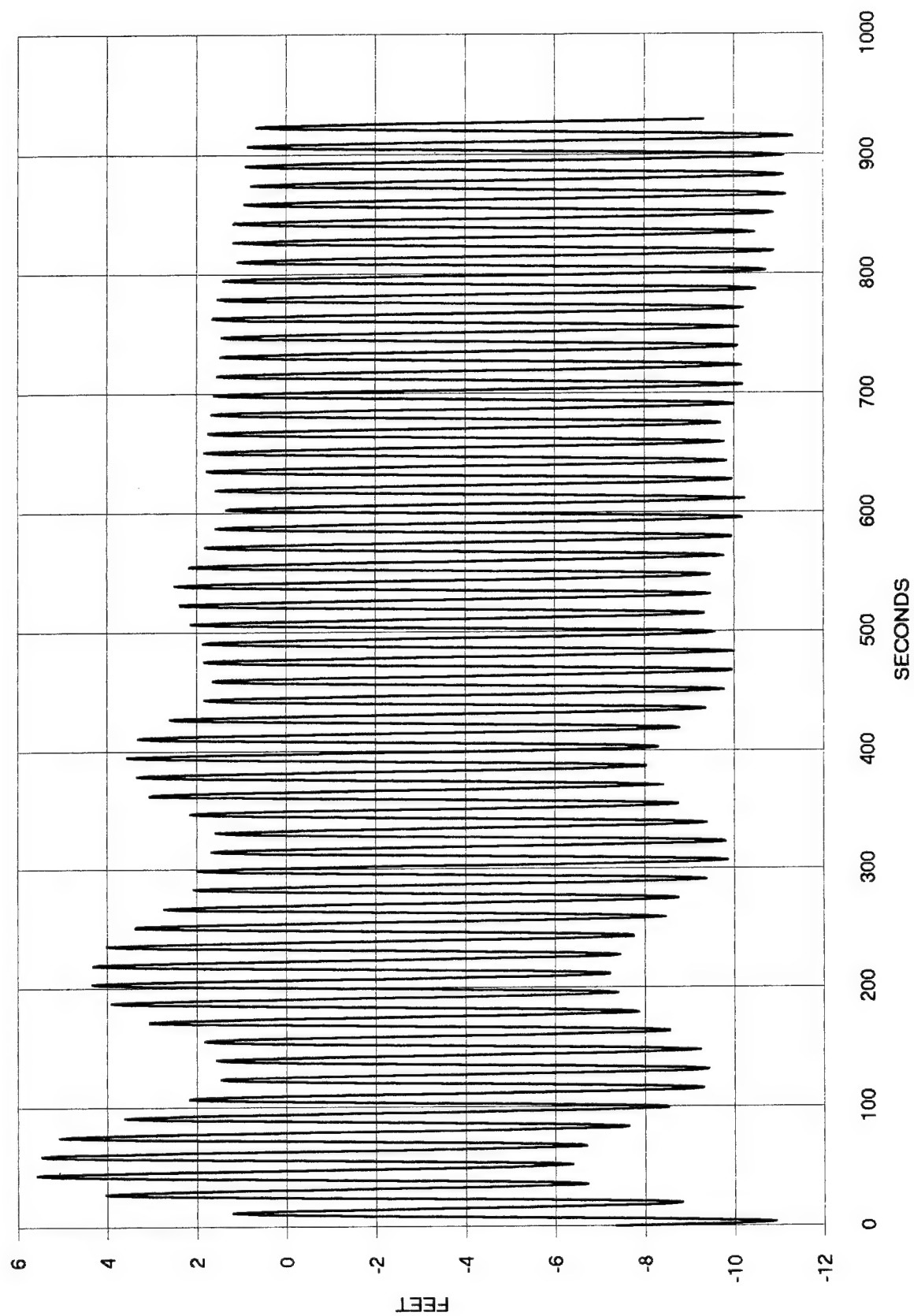
A1343 - HEAVE THP



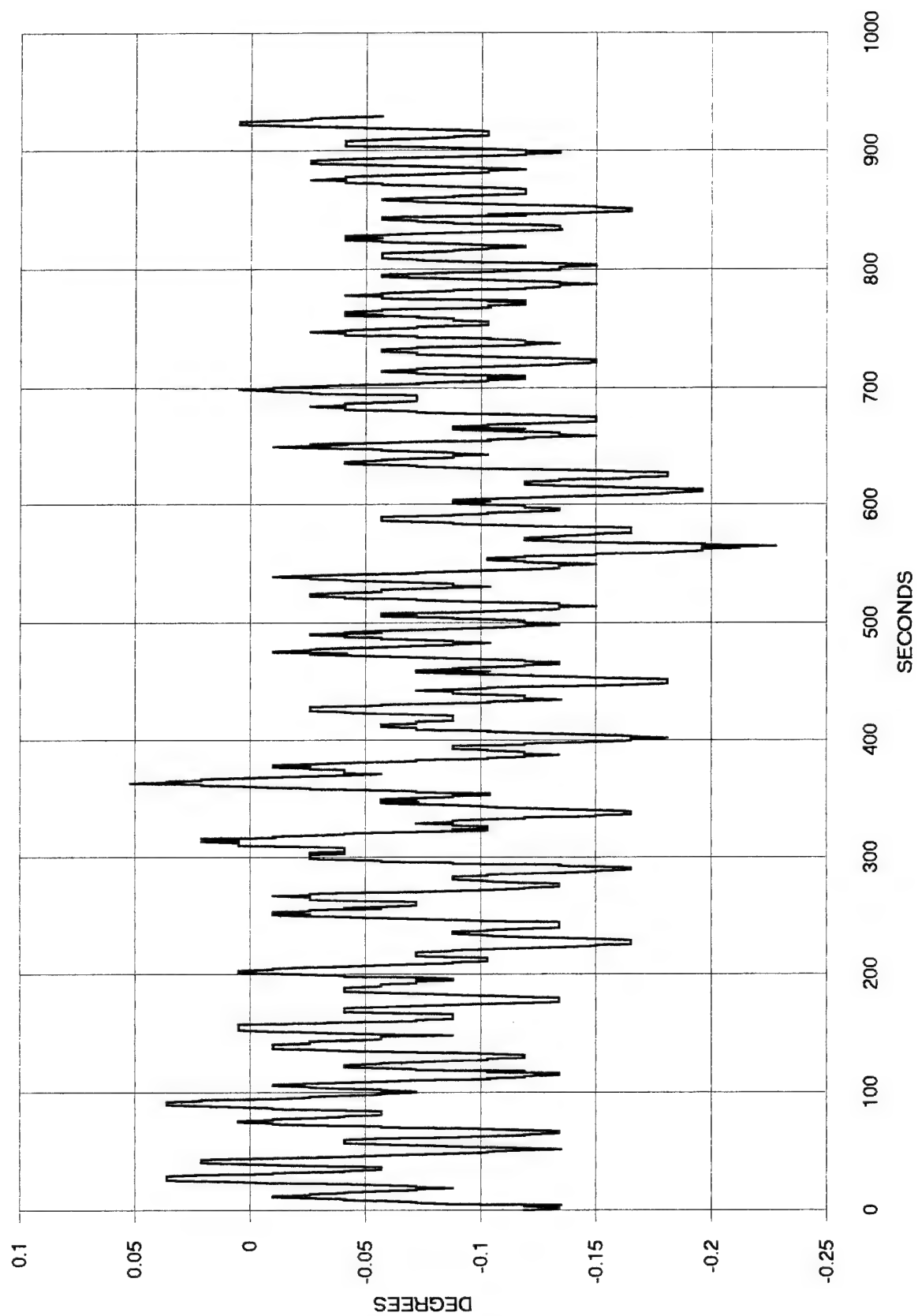
A1343 - PITCH THP



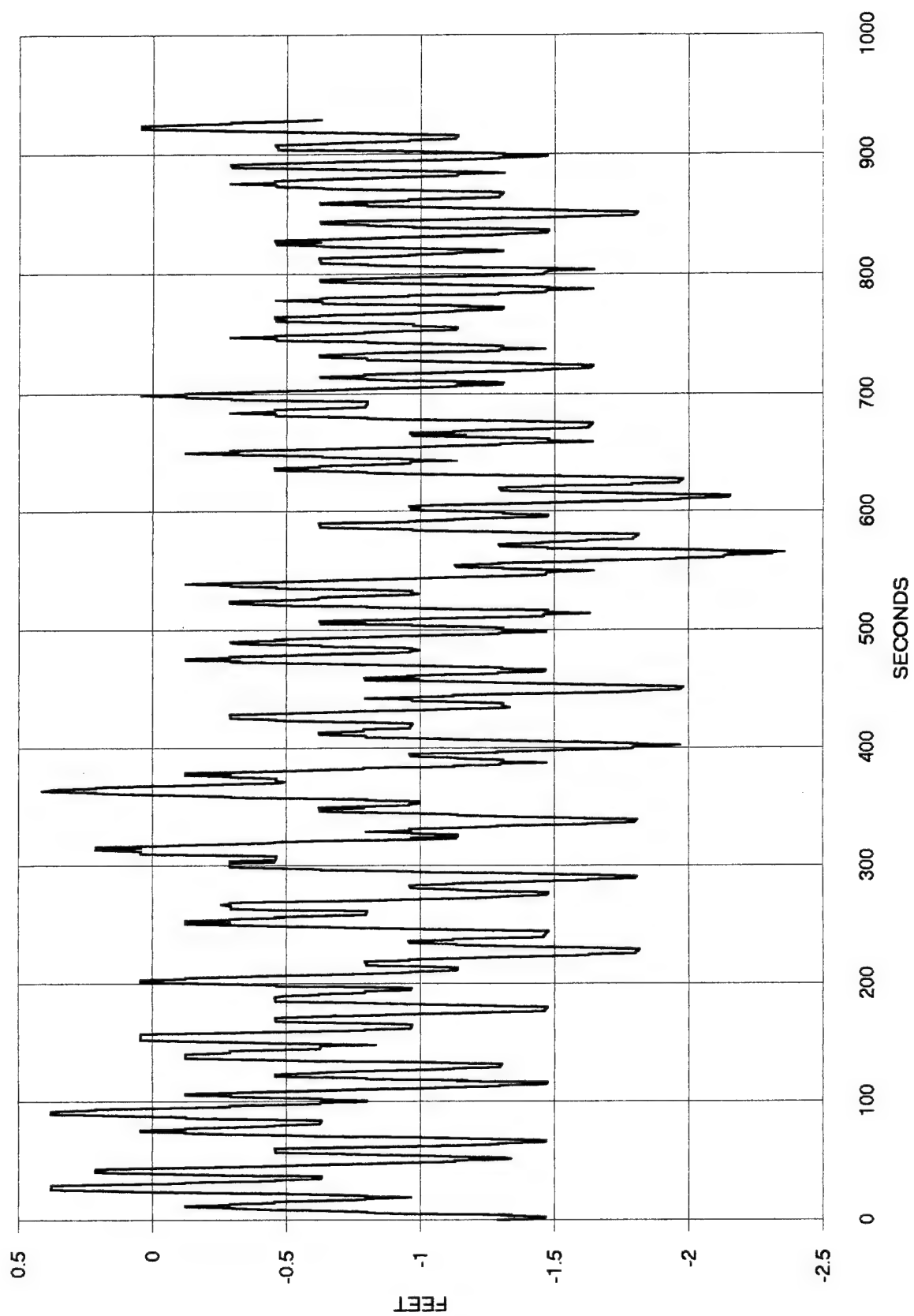
A1343 - SURGE THP



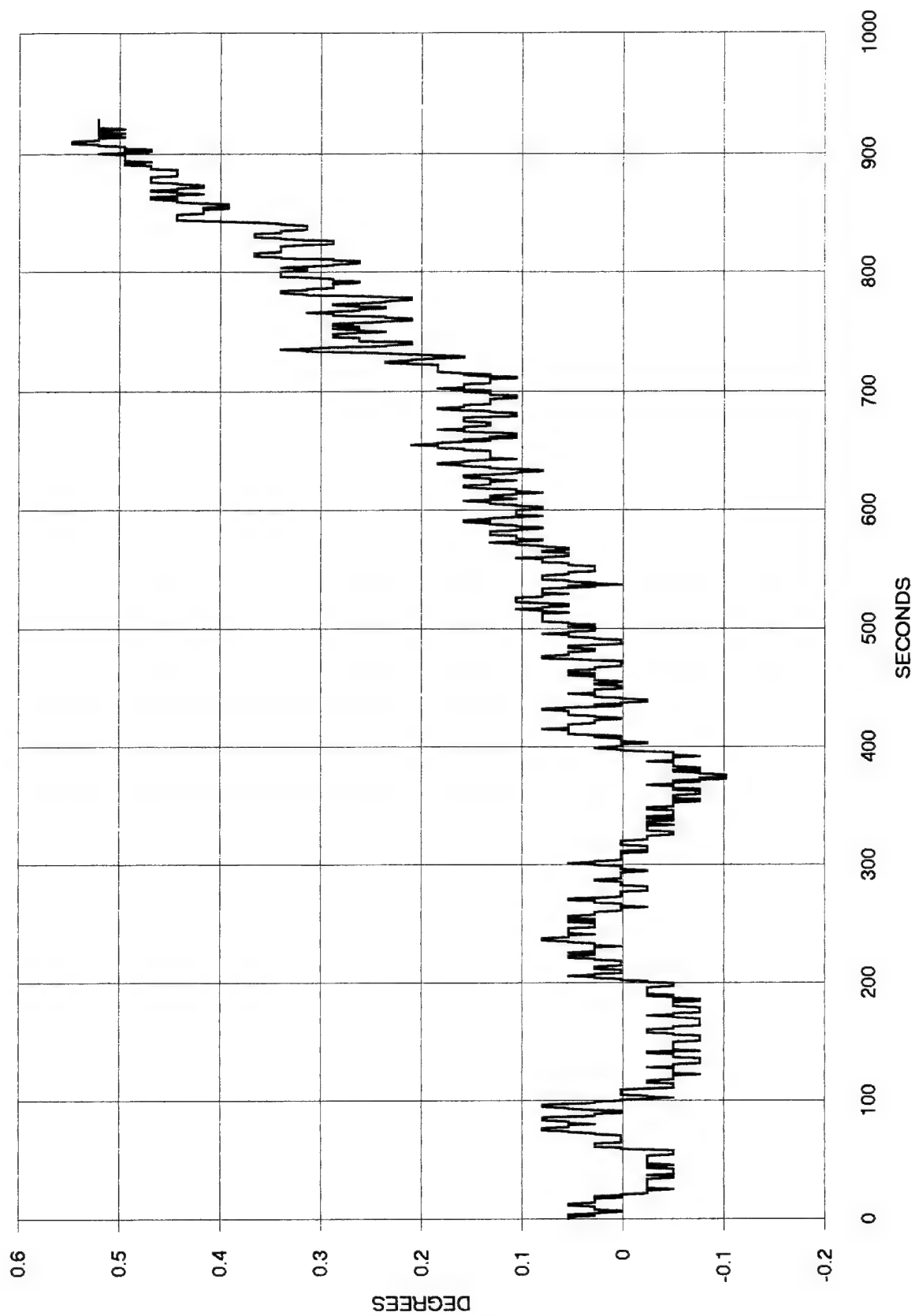
A1343 - ROLL THP



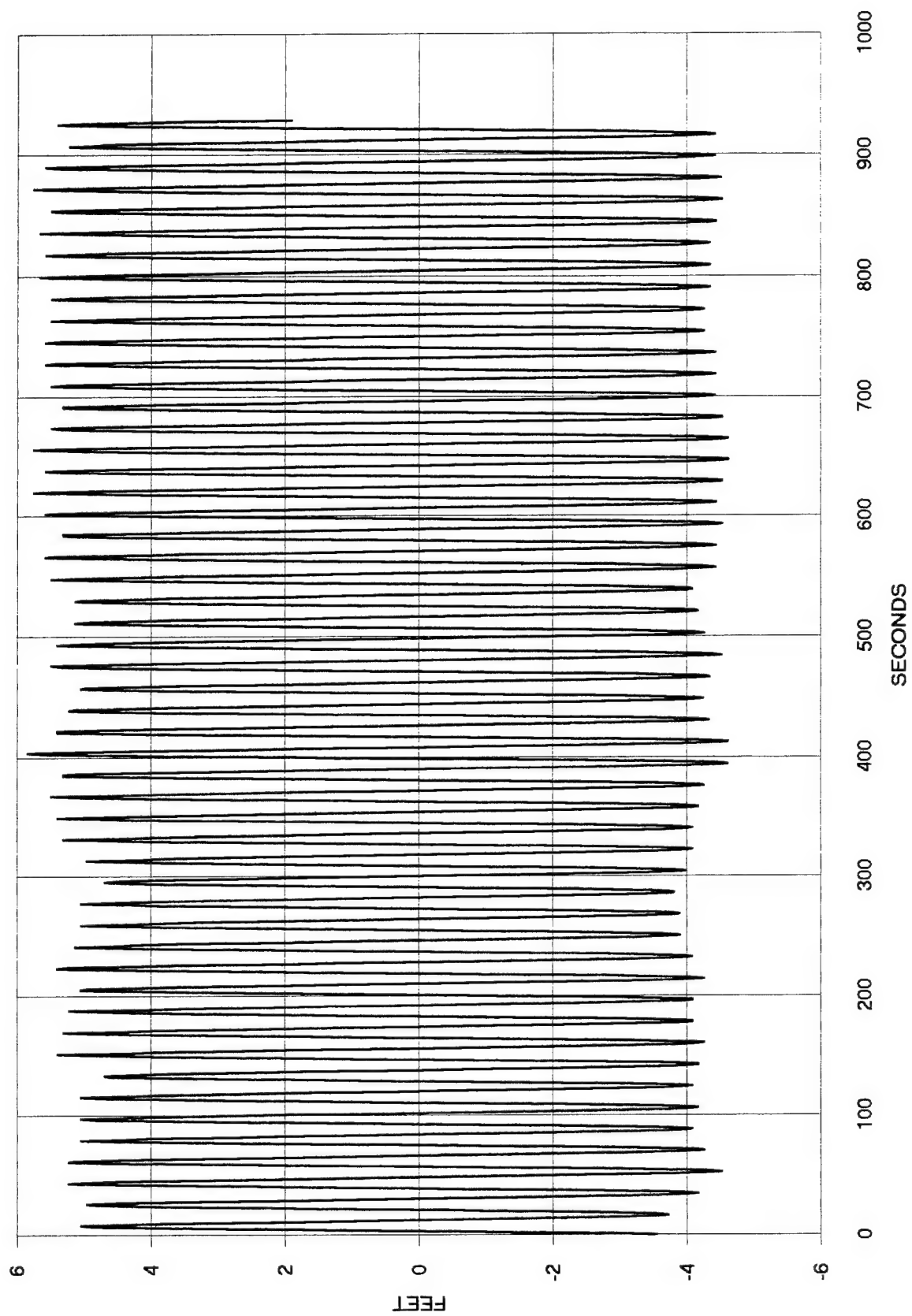
A1343 - SWAY THP



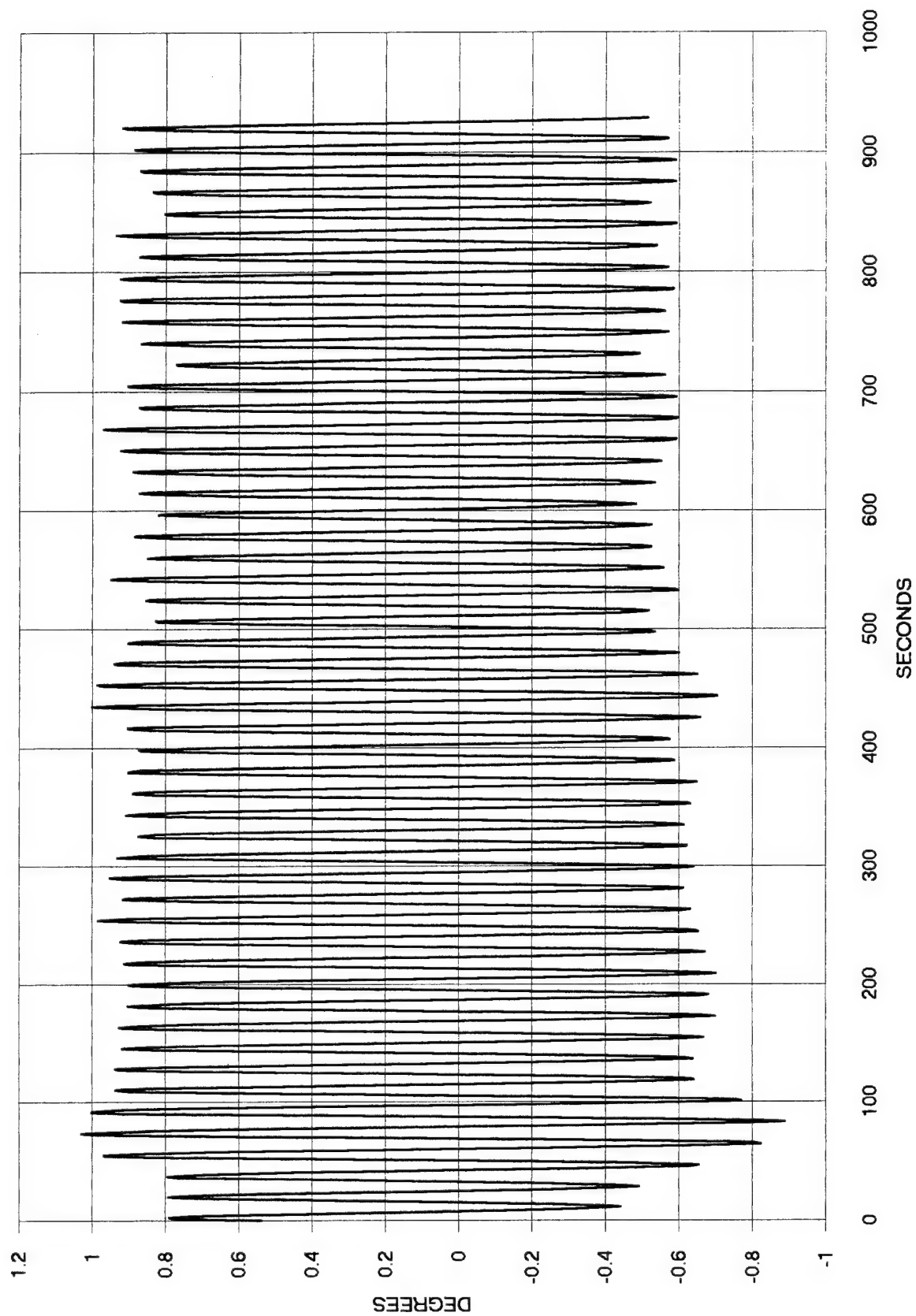
A1343 - YAW THP



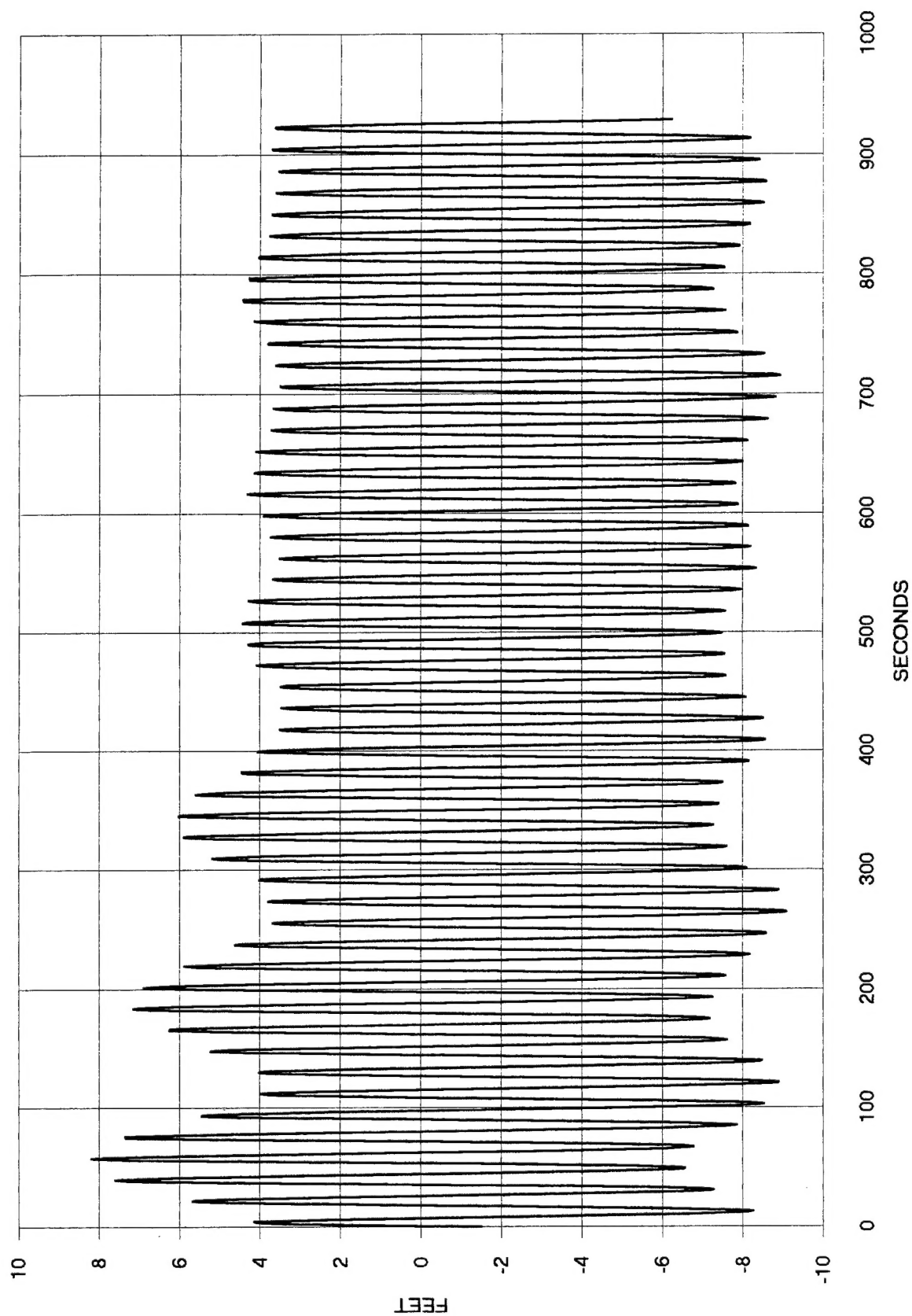
A1344 - HEAVE THP



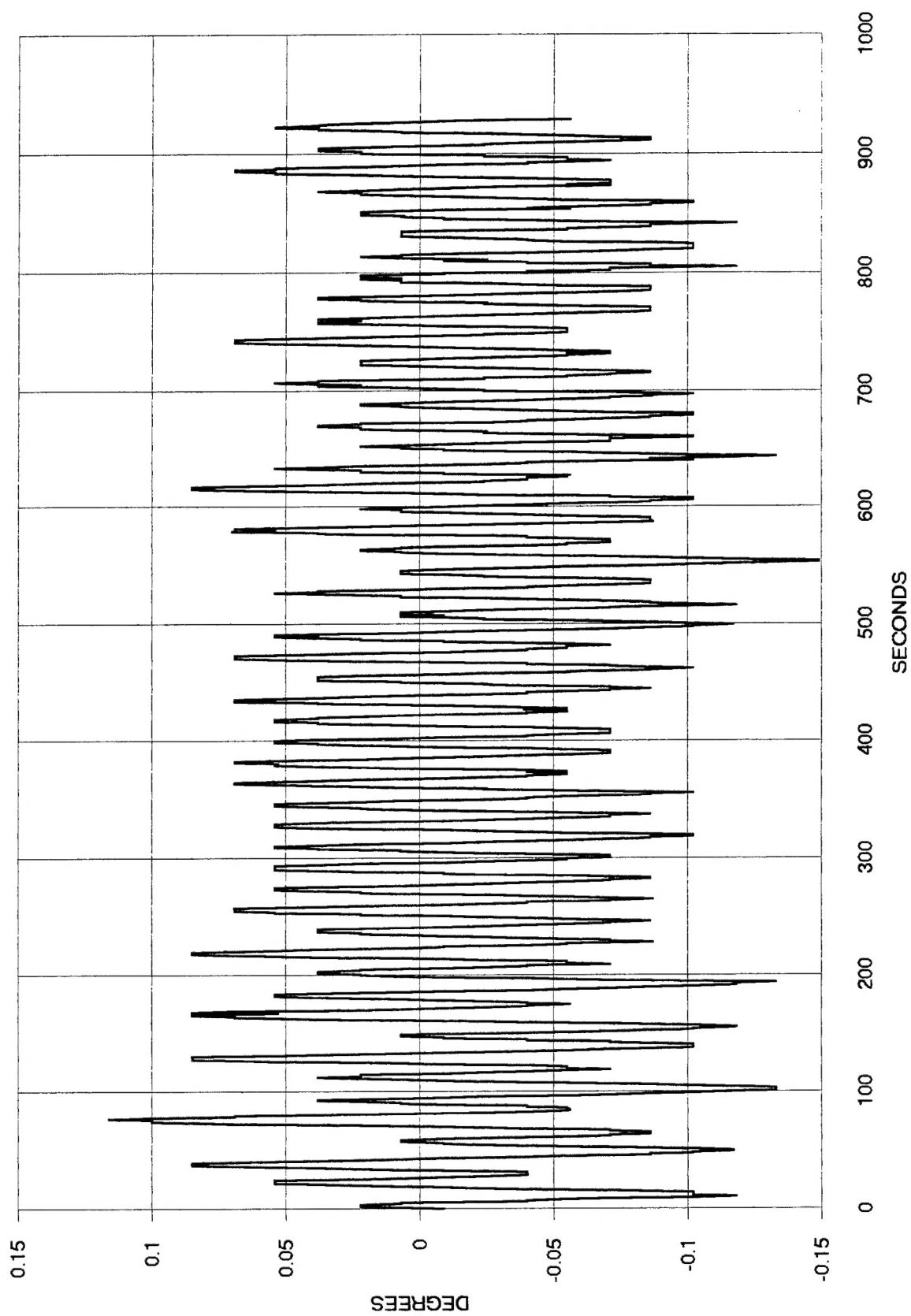
A1344 - PITCH THP



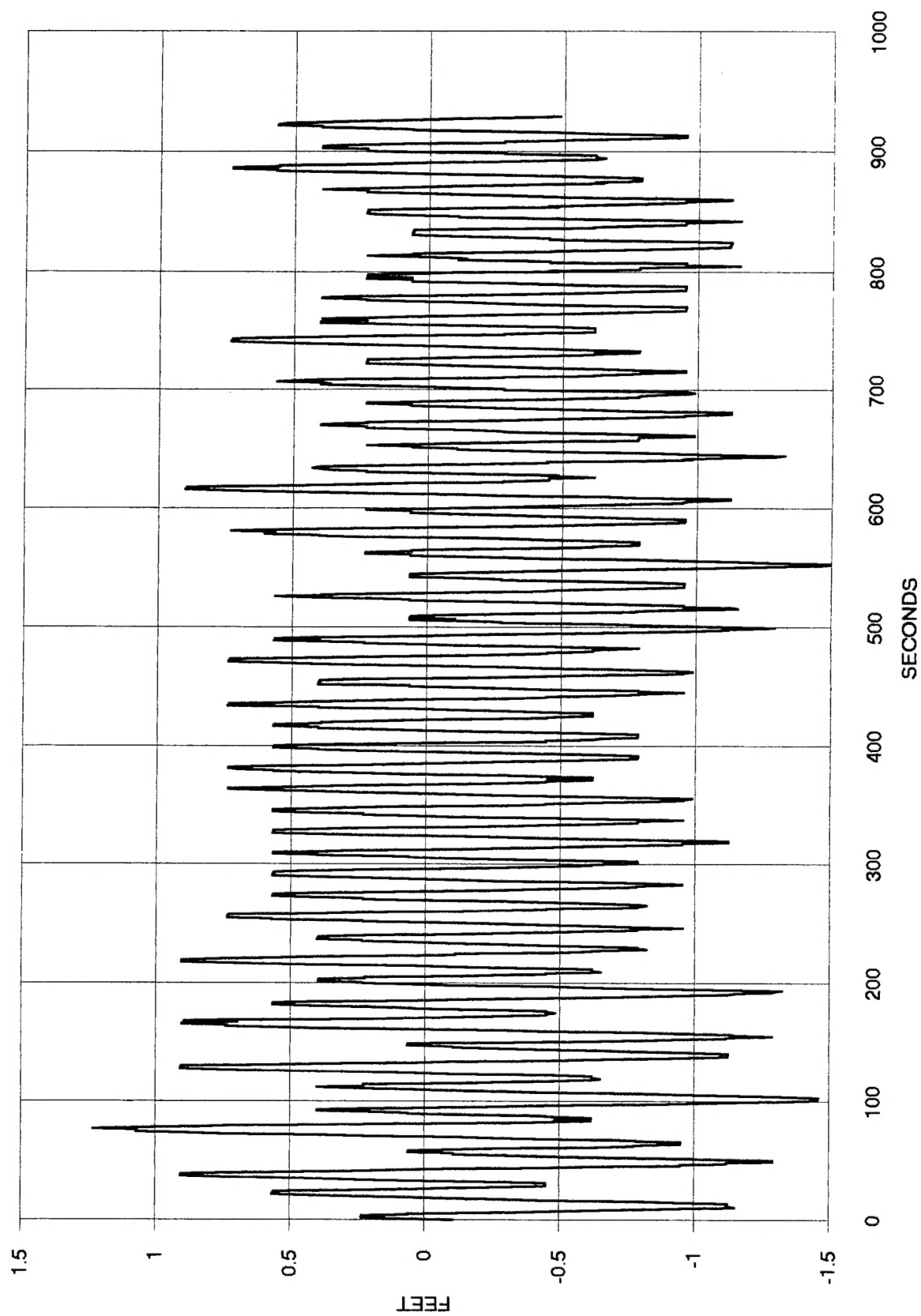
A1344 - SURGE THP



A1344 - ROLL THP



A1344 - SWAY THP



A1344 - YAW THP

